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ABSTRACT

This is part of a series of modules intended to present guidelines to teachers for evaluation of secondary science programs. It contains the directions for use and the report form. (SA)

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# Guidelines for Self-Assessment of Secondary-School Science Programs

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**Preface**
**Directions for Use**
**Report Form**

SE028 885

National Science Teachers Association

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This module is one part of a set of guidelines for the self-assessment of science programs, prepared by the National Science Teachers Association. The modules in the set are:

1. **Our School's Science Curriculum**
2. **Our School's Science Teachers**
3. **Science Student/Teacher Interactions in Our School**
4. **Science Facilities and Teaching Conditions in Our School**

Prices for the complete set and for individual modules are:

| | | |
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| Complete Self-Assessment Package | 471-14745 | $5 |
| Modules: Curriculum | 471-14736 | $1 |
| Teachers | 471-14738 | $1 |
| Interaction | 471-14740 | $1 |
| Facilities | 471-14742 | $1 |
| Report Form | 471-14744 | $1 |

Ordering Information: The complete Self-Assessment package includes an introductory preface, one copy of each of the modules, and a report form. The modules may be ordered separately by title and stock number. All orders must be prepaid except those on official order forms. Prepaid orders under $10.00 add $ .50 postage and handling; over $10.00 add $1.00 postage and handling. Shipping and handling charges will be added to all billed purchase orders. Please make checks payable to NSTA.

# Preface

This document is intended to offer ideas, guidelines, and a physical means for appropriate, concerned persons to do a searching, comprehensive examination of science teaching in their own secondary school. Underlying the preparation of the document is a basic assumption; namely, that teachers, students, parents, and "concerned citizens" of the school's community are, or should be, interested to know why there is a science program in the school, what it consists of, how well the science program is supported, and how well things are going. In short, this document invites and encourages a self-examination, a self-assessment aimed at finding answers to two general questions: (1) What do we want the science program in our school to be and to accomplish? (2) How well are we doing as measured against the hopes, desires, expectations for science in our school?

*Guidelines for Self-Assessment of Secondary-School Science Programs* is comprised of four parts, or modules. These are: Our School's Science Curriculum; Our School's Science Teachers; Science Student/Teacher Interactions in Our School; and Science Facilities and Teaching Conditions in Our School.

The motivation, the incentives, the reasons for doing a self-assessment should come from the science teachers themselves. Successful completion of the self-assessment, however, requires the support and cooperation of the administration, students, parents, and other community representatives.

The ultimate value of completing a self-assessment is the manner in which the data from the assessment are evaluated. Curriculum strengths and weaknesses may be found, improvements in facilities may be necessary, or relationships between the school and community or teachers and students may need strengthening. No doubt, study groups will find many outstanding aspects of the science program.

The first set of *Guidelines for Self-Assessment* was published in 1975. This effort was the result of a major study team selected by NSTA and credit is given to the following persons:

Essie C. Beck, Middle School Teacher, Jefferson Parish High School Board, Gretna, Louisiana

Robert H. Carleton, Executive Secretary (retired), National Science Teachers Association

Bruce Henderson, Pacific Grove High School, Pacific Grove, California

Richard J. Merrill, Consultant in Secondary Curriculum, Mt. Diablo Unified School District, Concord, California

John F. Reiher, Supervisor of Science and Environmental Education, State Department of Instruction, Dover, Delaware

Burton E. Voss, Professor, School of Education, University of Michigan, Ann Arbor

Robert Williams, Teacher of Biology, Morris High School, Bronx, New York

In May of 1977, the supply of *Self-Assessment* materials was exhausted. Thus, NSTA decided that prior to a second printing a team would review the *Guidelines* and make changes based upon suggestions from persons in the field who had used them. These suggestions have been incorporated into the revision.

NSTA will provide external recognition to all school science departments that complete at least three of the self-assessment modules. To each of these the National Science Teachers Association will present a handsome Certificate of Participation in A Self-Assessment of the School's Science Program. This certificate will be ready for framing and hanging and will, we hope, be proudly displayed as evidence of the professional spirit of the school's science teachers, students, and other involved persons.

The Revision Team has found the opportunity to serve on this task force a rewarding experience. We regard it as an excellent opportunity toward helping NSTA move forward in its professional service to science teaching.

Essie Beck
Tim Johnson
Douglas Reynolds
Burton Voss, Chairperson

# The Guidelines

The *Guidelines* are designed for a two-fold assessment — the first in terms of DESIRABILITY of the various aspects of preparation, professional activity, curriculum, and the like for your teaching situation and your school. The second is an assessment of the degree of ACHIEVEMENT of the item. The rating scales to be used are as follows:

DESIRABILITY for Our School

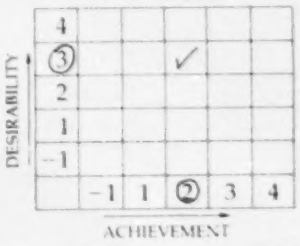
4—*very desirable*; of utmost value
3—*desirable*; of significant value
2—*moderately desirable*; of medium value
1—*unimportant*; of insignificant value in our school science program
—1—*undesirable*; of negative value in our school science program

ACHIEVEMENT in Our School

4—*excellent*; outstanding, extremely high level
3—*very good*; above average
2—*moderate* but significant; about average
1—*low* (small) achievement or practice; below average
—1—avoided or counteracted in our school

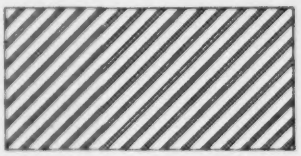
At the right of each item is a small matrix in which the rating is recorded. The vertical axis represents DESIRABILITY. Circle the rating that you wish to give to desirability. The horizontal axis represents ACHIEVEMENT. Circle the rating that you wish to give to achievement. Then, for the score on this item, place a check mark in the box where these ratings intersect. Thus, an item that was deemed highly desirable but only moderately achieved would be recorded as shown in the matrix.

An item considered undesirable, but found to be present to a high degree would be recorded thus:

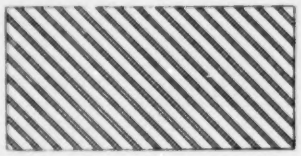



An examination of these ratings should be useful in diagnosing areas of strength that should be maintained and areas of weakness that need attention. After all ratings have been entered in the matrices, interpretation of these ratings will be assisted by applying a shaded key matrix with meanings as follows:

Scores in these areas of the matrix indicate important goals being achieved and undesirable features being avoided, the latter in the —1, —1 box.

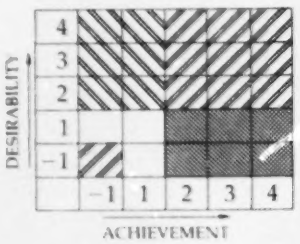


Scores in this area indicate items on which existing performance or conditions fall short of expectations.



Scores in this area reflect items on which more time, energy, and resources may be being spent than are justified by expectations.

Scores in this area represent rather neutral items which probably deserve little or no further attention.




Heavy loading in the upper areas of the summary indicates a generally high level of awareness and expectation. Heavy loading in the lower areas may, on the other hand, indicate generally low expectations or apathy about conditions.

1

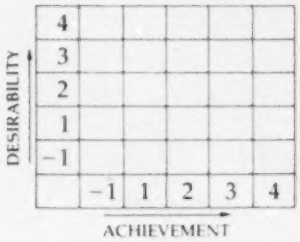
# Examples of Statements from the Self-Assessment Modules

Self-assessment statements are included in this section in order to provide the reader with an idea of the content of the various modules and to obtain a feeling for the matrix system used in the assessment process. *"Try out" the self-assessment system on the representative types of statements.* Note, however, that specific recommendations for the use of each self-assessment module are provided in each complete module.

*I. Our School's Science Curriculum*

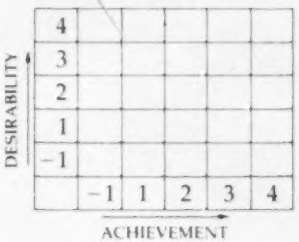
The curriculum module considers everything that students study and everything they do when they "take science."

Science study helps students prepare for entering upon immediate employment with saleable skills after leaving high school.




Comments _____

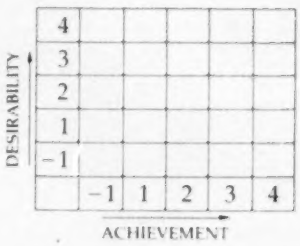
Our school science program provides opportunities for interested, qualified students to do individual or specialized work in science; e.g., self-paced study, independent study, individual projects, advanced placement, peer group tutoring, other.




Comments _____

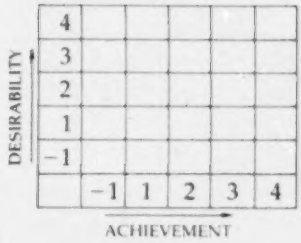
(To be done separately by students and teachers)

Our science program has multidisciplinary aspects through joint planning involving other curriculum areas such as English, social studies, mathematics, industrial arts.



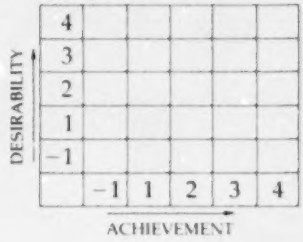

Comments _____

Science program development includes consideration of ideas, suggestions, and criticisms solicited from interested, concerned persons other than the staff and administration; e.g., current and former students, parents, prospective employers, others.




Comments _____

Attempts are made to assess student attitudes toward scientists, the scientific endeavor, and science/technology/society relationships.




Comments _____

*II. Our School's Science Teachers*

This module relates to the education of teachers, professional activities of teachers, and development-contributions to the profession, attitudes, and student and teacher perceptions of teacher professionalism.

(To be done only by teachers)

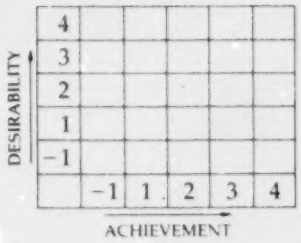
My preparation has enabled me to apply specific course and curriculum development techniques, such as construction of lesson plans, development of mini-courses or modules, writing behavioral objectives.

Comments _____

I hold membership in *at least one* national or state general organization for teachers of all subjects; e.g., the National Education Association, the American Federation of Teachers, their state affiliates or counterparts.

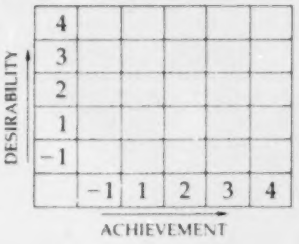
Comments _____

I have participated in one or more programs of organizations, conferences, or seminars for teachers and/or have served as an officer in an organization for teachers.




Comments _____

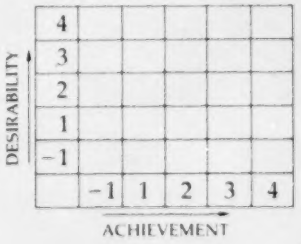
I discuss and plan with other teachers how the teaching of science can be related to their subjects.




Comments _____

(To be done separately by teachers and students)

Our science teachers know what they are doing and why; they have goals and plans for their courses; they come to each class meeting well prepared.



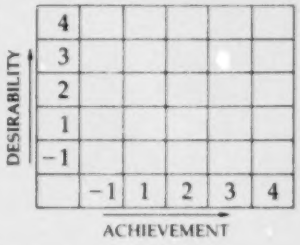

Comments _____

*III. Science Student/Teacher Interactions in Our School*

This module deals with the interpersonal relationships between students and teachers. One portion is to be completed by students and teachers sitting together and arriving at a consensus, the other portion is to be completed by students and teachers separately. Separate assessments will assist in determining the degree of correlation between teachers' perceptions of certain teaching behaviors and students' perceptions of those behaviors.

Part A (consensus agreement)

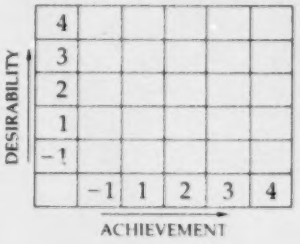
There is mutual respect between teacher and students, as evidenced by commending, accepting, and helping each other.




Comments _____

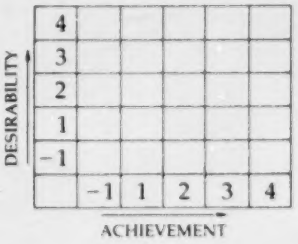
Part B (separate judgments)

Teachers show enthusiasm for teaching science.



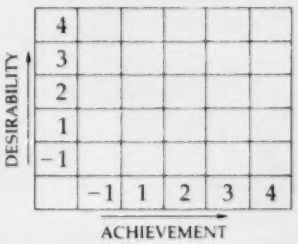

Comments _____

At the conclusion of a laboratory session or very soon thereafter, teachers help students analyze the outcomes.




Comments _____

In tests and examinations, teachers ask students questions calling for the application of what has been learned to new situations.

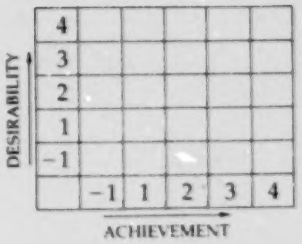



Comments _____

Teachers show warmth and understanding by being sensitive to the feelings of students.

Comments _____

Adequate office facilities are provided for each teacher, including desk and drawer space, file cabinet space, bookshelves or cases.



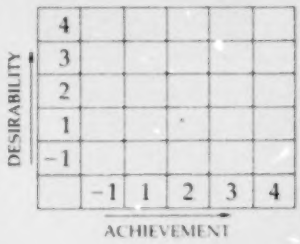

Comments _____

## IV. *Science Facilities and Teaching Conditions in Our School*

This portion of the Self-Assessment focuses on space and physical facilities for science classrooms and laboratory activities, and on the conditions — the atmosphere, so to speak — surrounding science teaching in the science department. The module is subdivided into three sections dealing, respectively, with space and facilities, teaching/learning equipment and materials, and policies and practices in regard to staff.

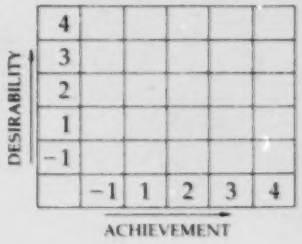
(To be done by total assessment group)

Our classrooms and laboratory areas are designed to accommodate or facilitate full-class laboratory work.



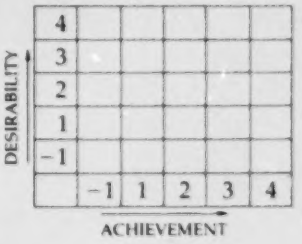

Comments _____

Safety goggles are mandatory for students, teachers, and all classroom visitors.




Comments _____

Science teachers are centrally and effectively involved in the selection and purchase of all instructional equipment and materials for use in the science department.




Comments _____

An outdoor nature study area is available on or near the school grounds or campus.

Comments _____

In assigning beginning teachers or teachers new to the school, special care is taken to avoid assigning very large or difficult classes, more than two preparations, heavy responsibilities beyond class assignments, or schedules requiring frequent room changes.

Comments _____

Evaluation by students is a part of the total evaluation of teacher performance.

Comments _____

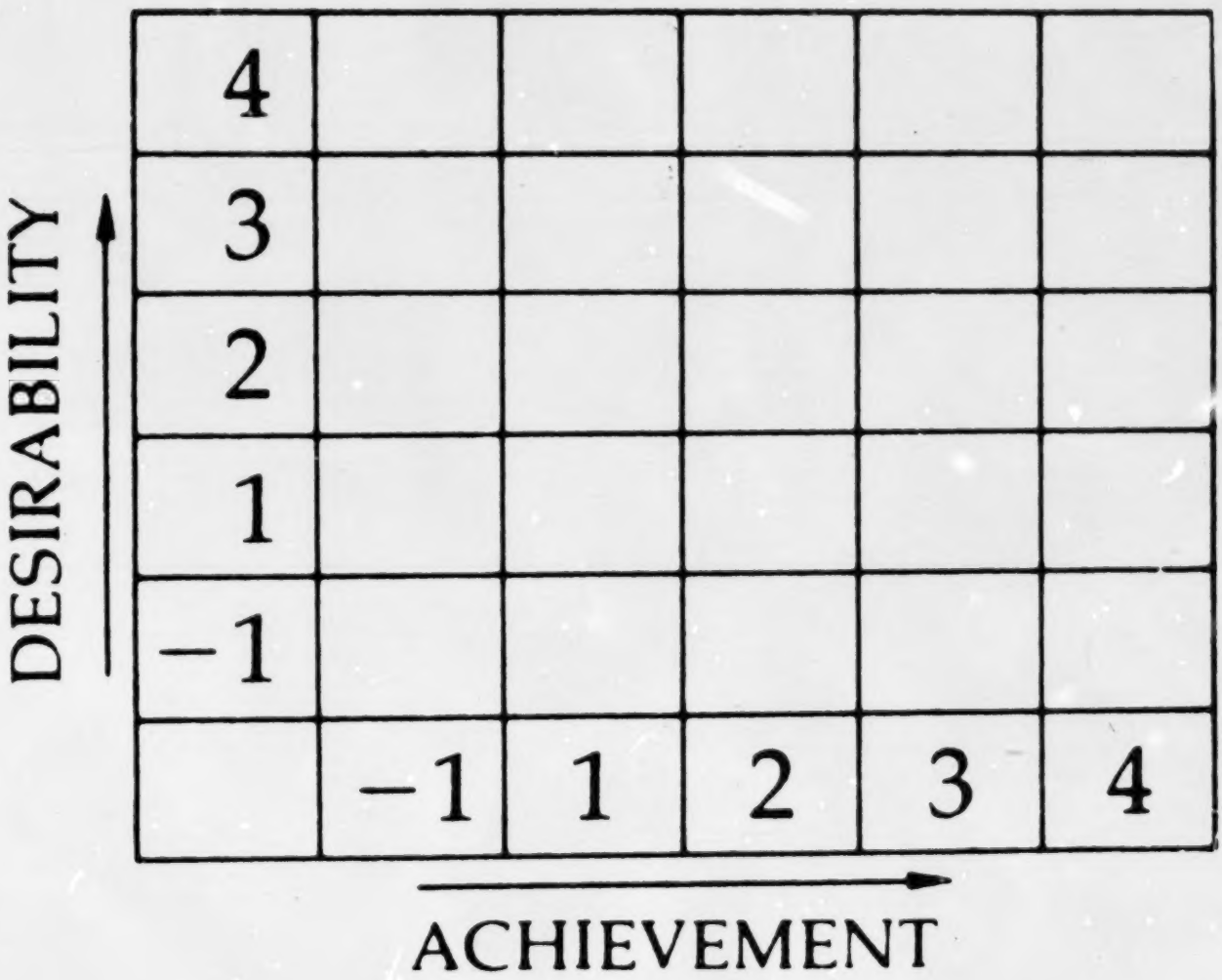
The administration "backs up" a teacher's professional decisions; e.g., in classroom discipline, in the assignment of grades or marks.

Comments _____

## Suggestions

A few suggestions on "how to get going" on a self-assessment in your school. Perhaps this can best be done simply by listing "steps to take," once you have examined all of the self-assessment modules, have discussed these and the self-assessment idea with other appropriate persons, and have received a green light to proceed.

1. The facilitator (department coordinator, principal, science teacher) must be familiar and knowledgeable about the philosophy, content and scope of the guidelines for self-assessment.
2. Suggestions for teams:
   a. Teacher groups should be diversified.
   b. Student groups should include a spectrum of student academic abilities, grade levels, ethnic and social backgrounds, etc.
   c. Parent groups should represent a cross-section of the total community that the school serves. (Pit-fall: Experience has shown that some parents from socio-economic levels must be encouraged to participate in this kind of activity.)
3. Discuss with potential participants the advantages of periodically doing an assessment of the science program.
4. Share with potential participants the titles, sub titles of the available modules and only a few sample items from each sub-title. (Pit-fall: Experience has shown that it is inadvisable to present the instrument in its entirety at the first exposure.)
5. Once there is a consensus that a need exists for a science program assessment and these "guidelines" will assist in this goal, convene a team(s) for preliminary discussion, questions and clarification.
6. Establish with the team and administration some common understandings such as:
   a. Time commitment of participants.
   b. Time schedule for the tasks (modules are not necessarily sequential)
   c. Assign tasks
   d. Consideration for implementing identified needs.
7. Move ahead with the self-assessment endeavor, following the suggestions and guidelines set forth in each module and/or each section. No doubt there will be several sessions at which the assessment team members will want or need to engage in discussions in order to arrive at consensus on the ratings to be assigned to the various items.
8. Enter all final assessment ratings on a master copy of the assessment module(s) and make plans for final reporting, follow-up actions, publicity, etc.
9. Encouraged: Complete the Report of a School Self-Assessment with all final ratings entered for the module(s) you have completed and receive your Certificate of Participation ready for framing.




Use this matrix to make a transparency to use during your inservice instruction. You may also use this matrix as a summary matrix for an entire module.

# Report of a School Self-Assessment

Whether the results of a school's self-assessment are reported to NSTA is entirely a matter of local option. The prime purpose of self-assessment is to encourage local examination and discussion directed toward the goal of improving the science program. However, NSTA does invite and encourage cooperating schools to report for the purpose of developing a bank of information potentially useful in deriving "a national picture" of certain aspects of science teaching, developing general profiles of beliefs and practices in various school settings, and serving as a source of data for doctoral studies. NSTA will publish accounts of these items from time to time if enough reporting schools cooperate, but **there is no intention of developing "national standards" or school rating scales**. Schools that do wish to cooperate, having completed one or more of the assessment modules, should complete the following report form and mail it to: Coordinator, School Science Self-Assessment Project, National Science Teachers Association, 1742 Connecticut Avenue, N.W., Washington, D.C. 20009. Reporting schools will receive a handsome Certificate of Participation, suitable for framing and display.

It is recommended that a copy of this summary report be retained by the School for use in local interpretation, discussion, and the follow-up actions.

Name of
Reporting School _____

Mail Address of
School _____

Name of
School Principal _____

Name of Person
Making this Report _____

Title or Position _____

Date Report Submitted _____

1. How would you describe the location or setting of **your school**? (check **one**)
   - 1-1 ☐ **Inner core** of city having 250,000 population or more
   - 1-2 ☐ **Another part** of city having 250,000 population or more
   - 1-3 ☐ City having population less than 250,000 but more than 25,000
   - 1-4 ☐ Suburban
   - 1-5 ☐ City or town having less than 25,000 population, **not suburban**
   - 1-6 ☐ Rural
   - 1-7 ☐ Other: _____

2. What is the size of the **school system** (total student enrollment) in which your school is located? (check **one**)
   - 2-1 ☐ 100,000 or more students
   - 2-2 ☐ 50,000-99,999
   - 2-3 ☐ 25,000-49,999
   - 2-4 ☐ 12,000-24,999
   - 2-5 ☐ 6,000-11,999
   - 2-6 ☐ 5,999 or fewer

3. What grades are included in the school on which you are reporting?
   (Circle **lowest** grade and also **highest** grade)

   5 6 7 8 9 10 11 12 13 14

4. What is the total student enrollment in **your school** this year?

   _____ students in your school

5. Within the total student enrollment in your school, what percent of the students is there in each of the following categories?

   Black _____
   Spanish surname _____
   Caucasian _____
   Other _____

   Socioeconomic status
   high _____
   middle _____
   low _____

   Drop outs _____

6. What percent of students from your school completing the 12th grade go on to college?

_____

7. What percent of the students completing 12th grade do not enter college but pursue post-high school education in technical or specialized training, including apprenticeships?

_____

8. How many students are enrolled in **some** science class or course in your school this year? (Count only once any students enrolled in more than one science class.) Take the percentage of total number of students in school.

_____ students taking science in our school

| | Total | Percent |
|---|---|---|
| Chemistry | No. _____ | % _____ |
| Biology | No. _____ | % _____ |
| Physics | No. _____ | % _____ |
| Earth science | No. _____ | % _____ |
| Advanced science | No. _____ | % _____ |
| Science for slow learners | No. _____ | % _____ |

9. In your school, how many persons perform functions or have responsibilities as follows?

9-1 _____ persons are primarily **science teachers** devoting **50 percent or more** of their time to science

9-2 _____ persons teach one class or more in science but devote **less than 50 percent** of their total teaching time to science

9-3 _____ persons are paid teaching aides, assistants, or paraprofessionals in the science department (include students **only if paid**)

9-4 _____ person(s) has (have) designated responsibility as department head (chairman) with **at least 20 percent** of the school week allocated to this function.

10. How many of your teachers with one class or more in science have the following numbers of different preparations during a school week? (Include both science and non-science; e.g., a teacher with one class in algebra I, one class in geometry, one class in physics, and one group of students in "independent study" would have four preparations.)

10-1 _____ have one preparation only

10-2 _____ have two preparations

10-3 _____ have three preparations

10-4 _____ have four or more preparations

11. How many persons in the science department have each of the following as their **highest level** of collegiate attainment?

11-1 _____ have a bachelor's degree

11-2 _____ have a master's degree

11-3 _____ have a master's degree plus 30 or more credits

11-4 _____ have a doctoral degree

11-5 Other: _____

12. How many persons in the science department have received the following honors, awards, or recognitions? List "other" honors in spaces provided.

12-1 _____ are Phi Beta Kappa

12-2 _____ are Phi Delta Kappa

12-3 _____ are Sigma Xi

12-4 Other: _____

12-5 Other: _____

13. Has the school science department received external grants, support, or funding from federal government agencies, private foundations, or business-industry to carry on curriculum, instructional, or special projects within the past five years?

13-1 ☐ Yes ☐ No

13-2 If "yes," from what sources and for what purposes?

Source: _____

Purpose: _____

Source: _____

Purpose: _____

14. How many persons on the science department staff are **now serving** in the following professional service roles? List other comparable service.

14-1 _____ as **officer** or **committee chairman** in a national, regional, or state organization for science teachers

14-2 _____ as member (but not chairman) of state, regional, or national committee or project task force concerned with science teaching

14-3 Other: _____

14-4 Other: _____

15. List other pertinent information about the school, the students, the science department, or the science faculty deemed significant and in line with items 1-14 above.

15-1 _____

_____

15-2 _____

_____

15-3 _____

_____

# Summary of Assessment Items

Enter in the following matrices the ratings that were developed by the various assessment teams as they evaluated each of the items in all of the modules that were included in your self-assessment endeavor.

An examination of these ratings should be useful in diagnosing areas of strength that should be maintained and areas of weakness that need attention. After all ratings have been entered in the matrices, interpretation of these ratings will be assisted by applying a shaded key matrix with meanings as follows:

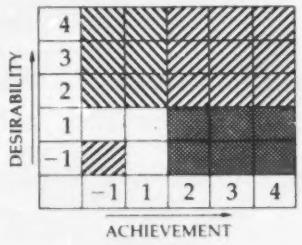
Scores in these areas of the matrix indicate important goals being achieved and undesirable features being avoided.

Scores in this area indicate items on which existing performance or conditions fall short of expectations.

Scores in this area reflect items on which more time, energy, and resources may be being spent than is justified by expectations.

Scores in this area represent rather neutral items which probably deserve little or no further attention.

Heavy loading in the upper areas of the summary indicates a generally high level of awareness and expectation. Heavy loading in the lower areas may, on the other hand, indicate generally low expectations or apathy about conditions.




## I. Curriculum

*A. Why Science in Our School?*

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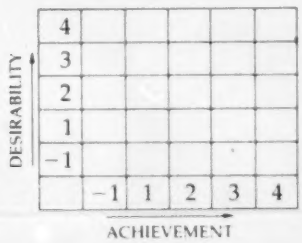


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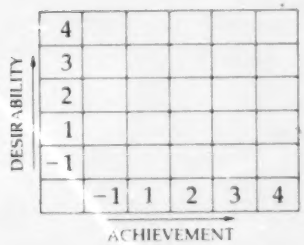


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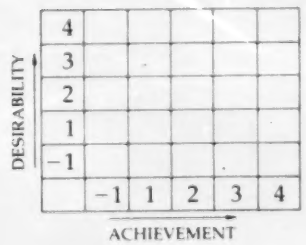


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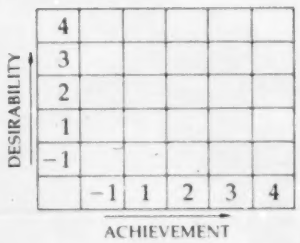


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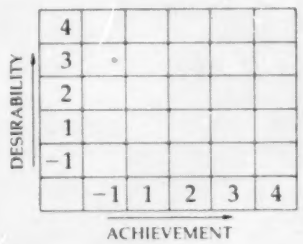


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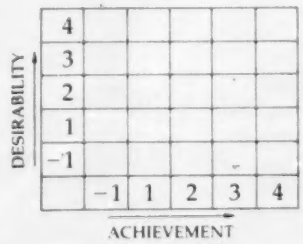


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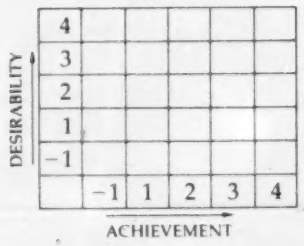


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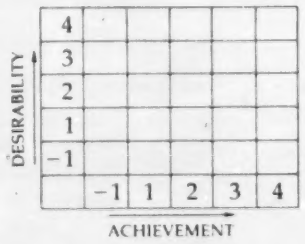


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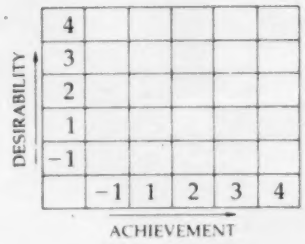

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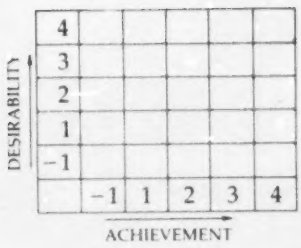


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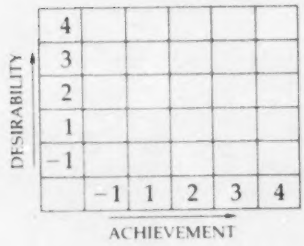


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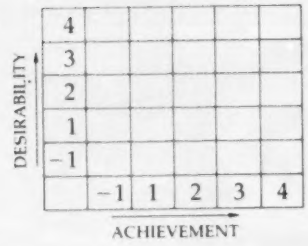


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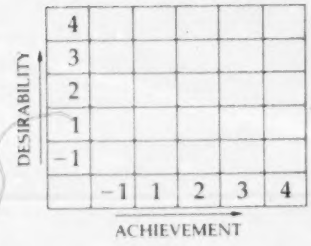


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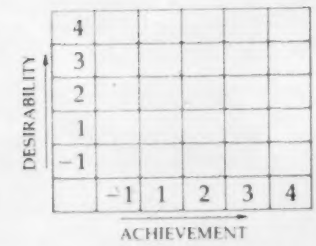


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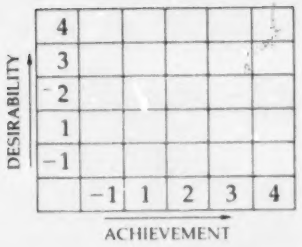


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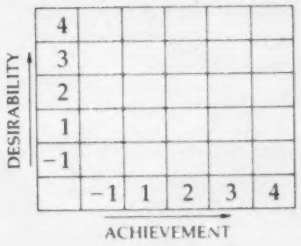


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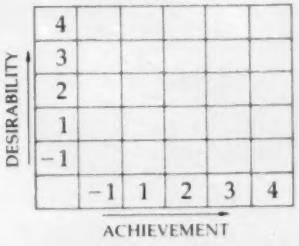


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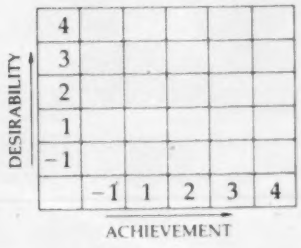


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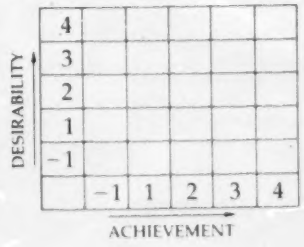


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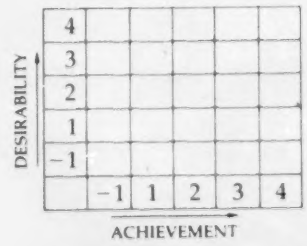


## B. *Student and Teacher Perceptions of the Science Program*

### Student Perceptions

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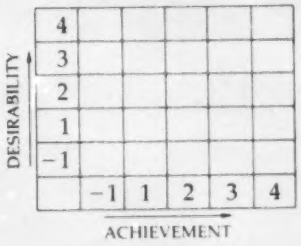


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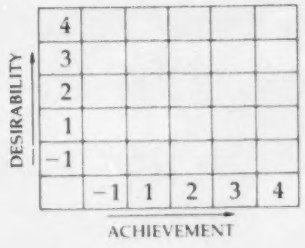


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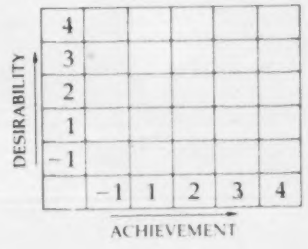


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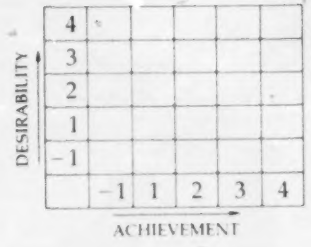


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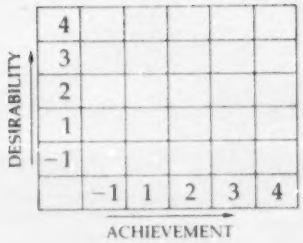


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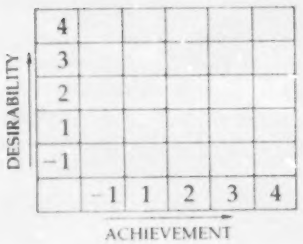


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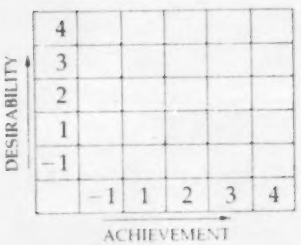


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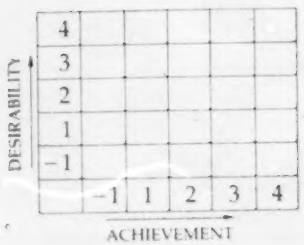


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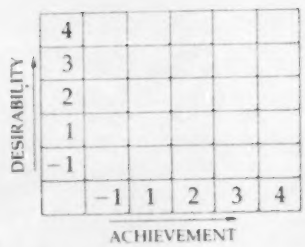


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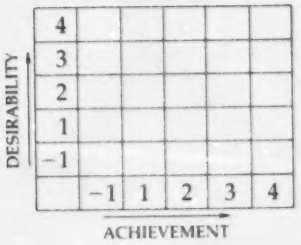


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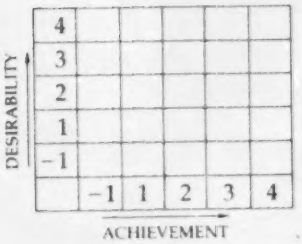


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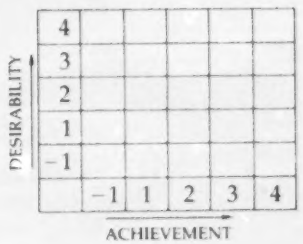


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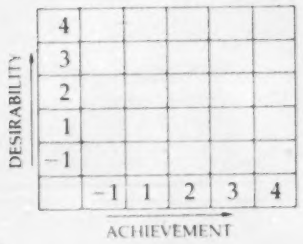


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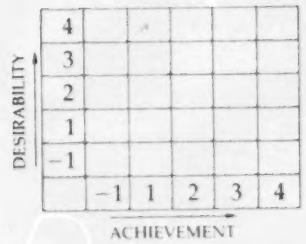


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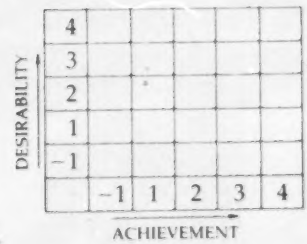


## Teacher Perceptions

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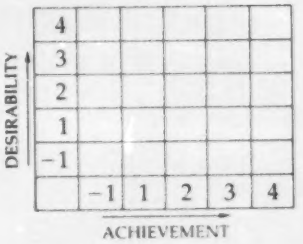


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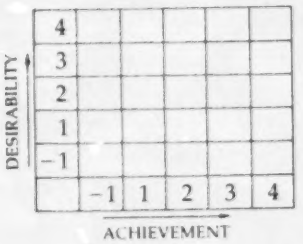


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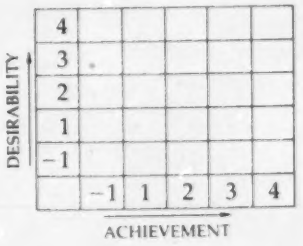


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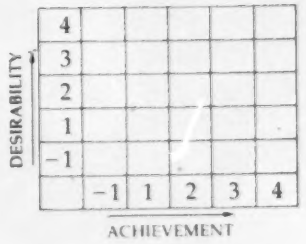


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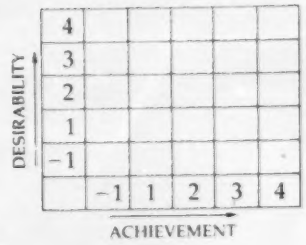

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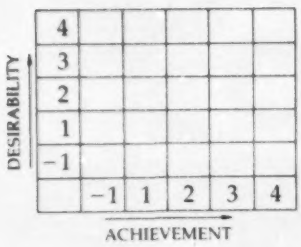


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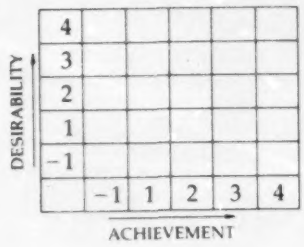


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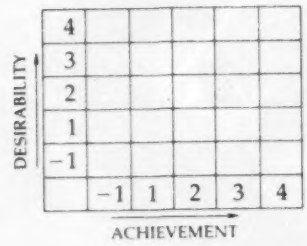


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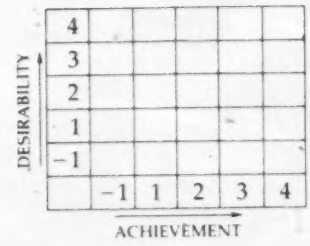


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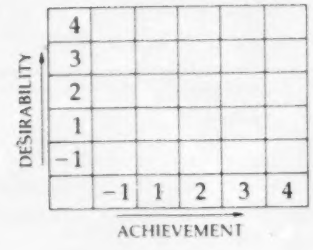


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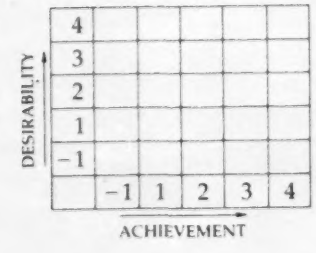


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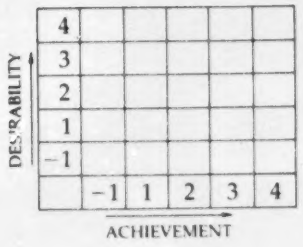


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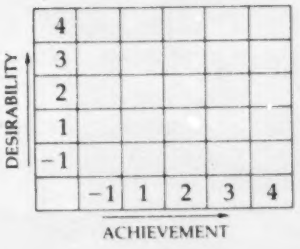


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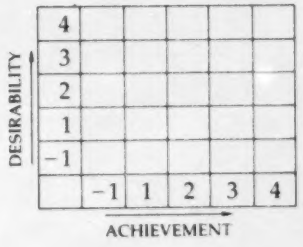


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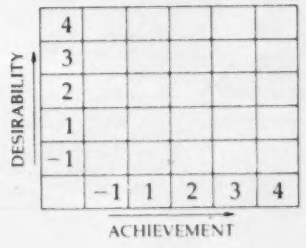


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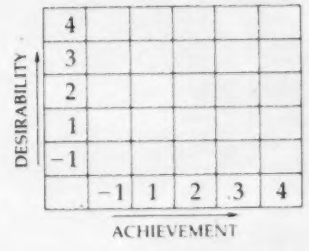


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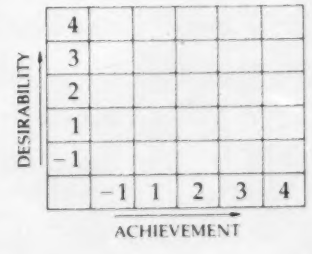


### C. How Does Our Science Program Come to Be?

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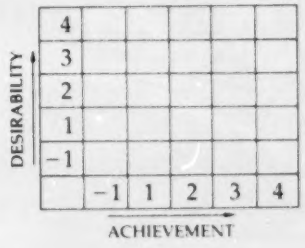


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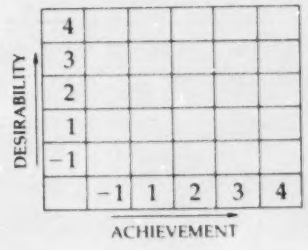


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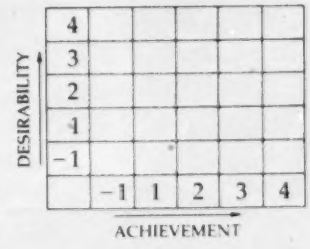


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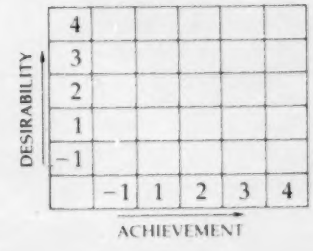


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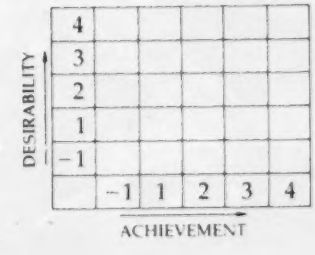

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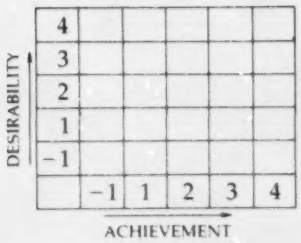


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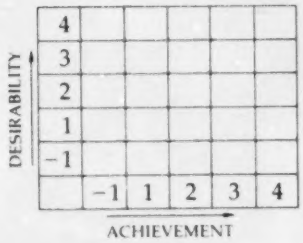


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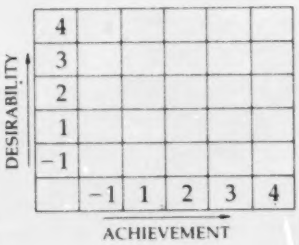


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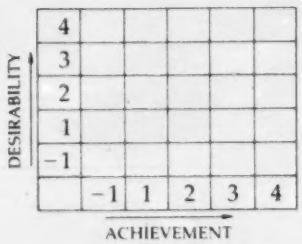


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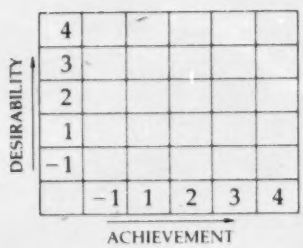


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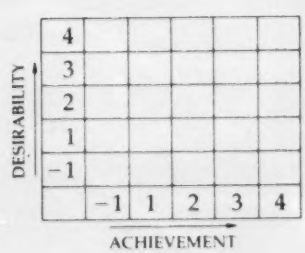


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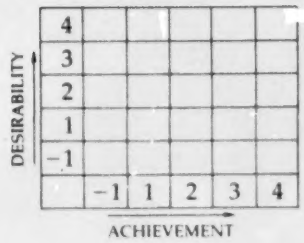


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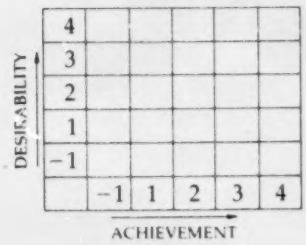


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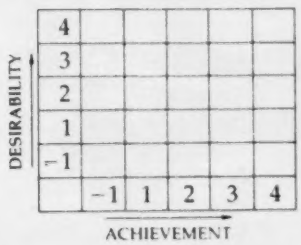


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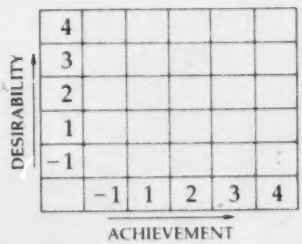


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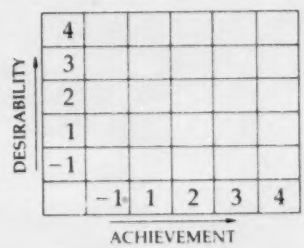


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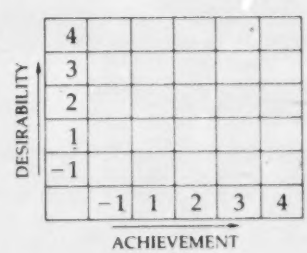


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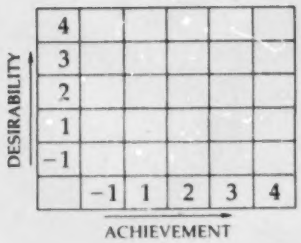


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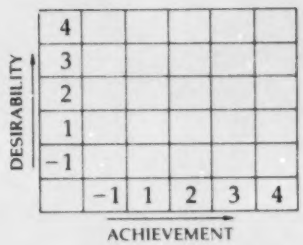


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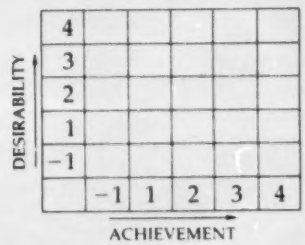


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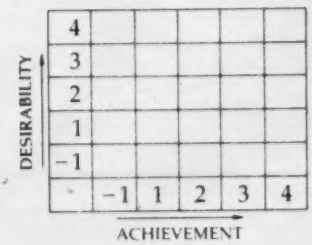


*D. How Is Evaluation Carried on in Our School?*

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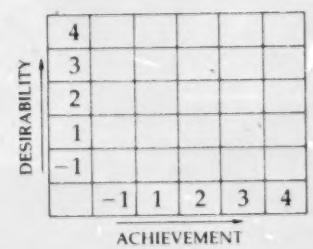

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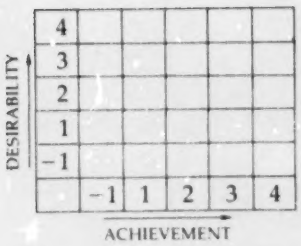


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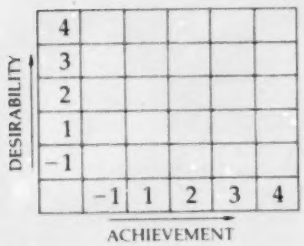


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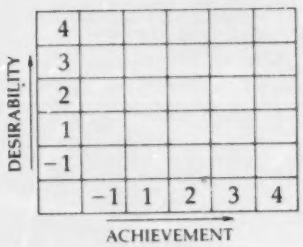


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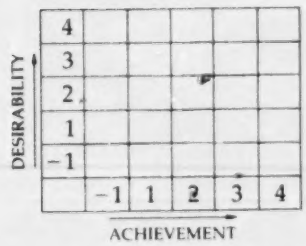


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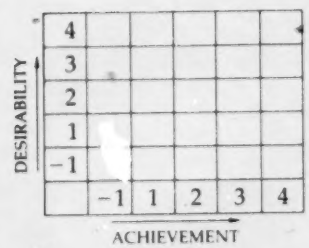


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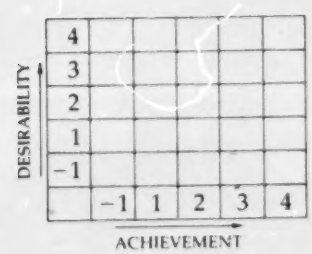


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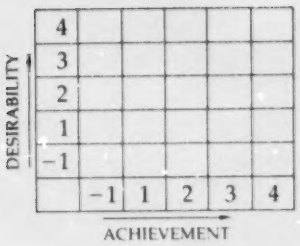


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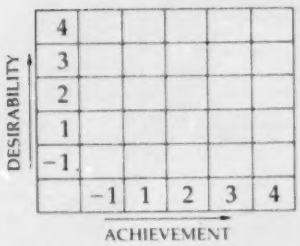


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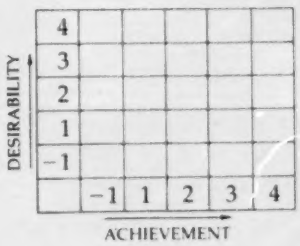


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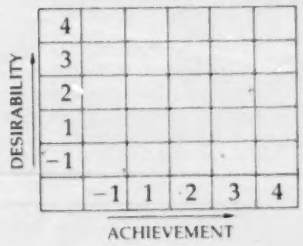


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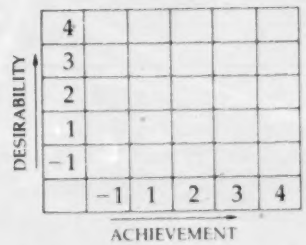


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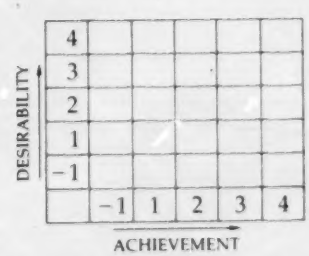


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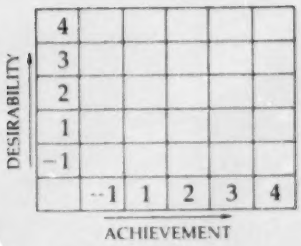


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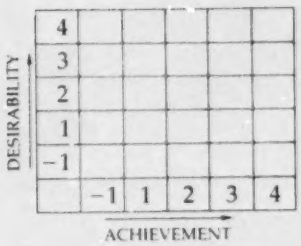


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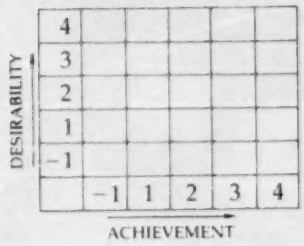


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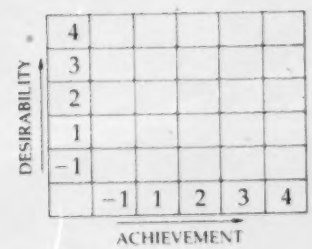

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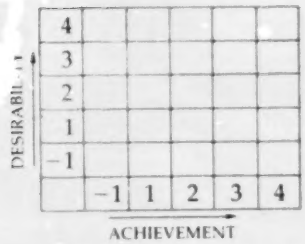


## II. Our School's Science Teachers

### A. *Science Background and General Education*

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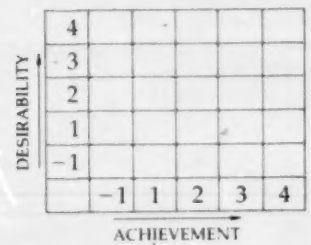


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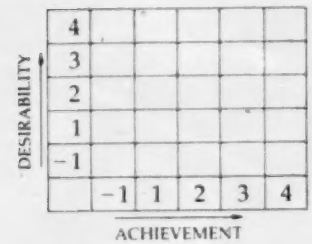


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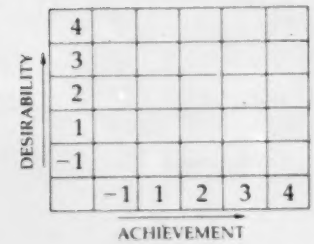


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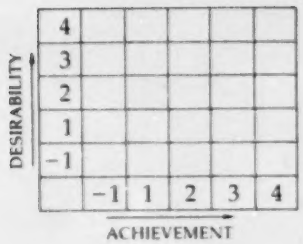


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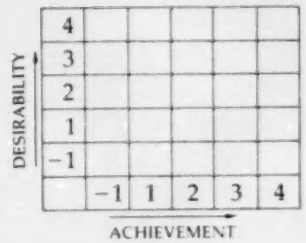


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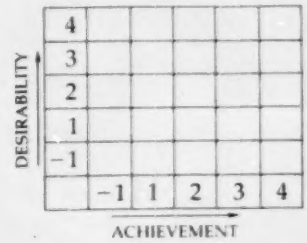


### B. *Professional Education*

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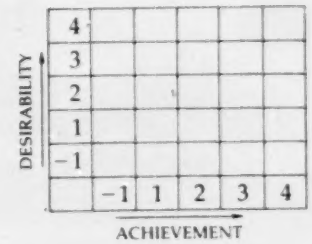


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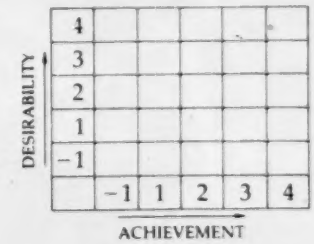


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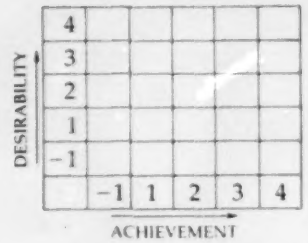


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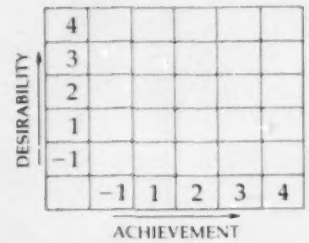


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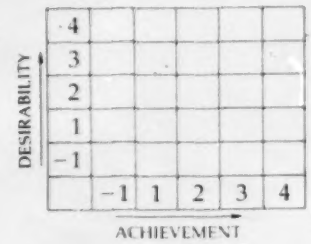


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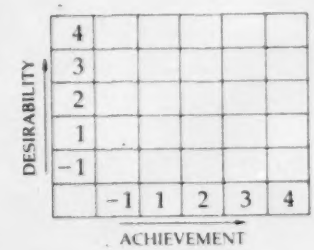

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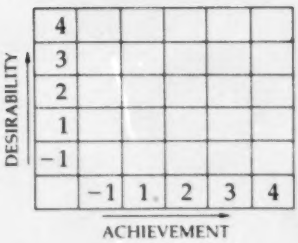


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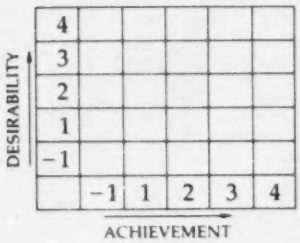


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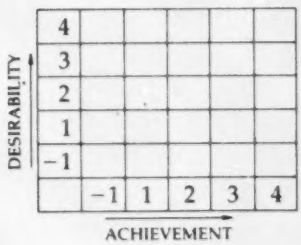


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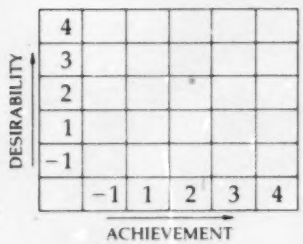


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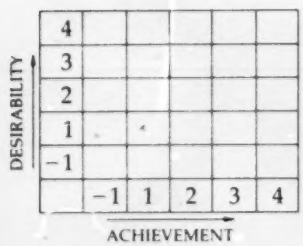


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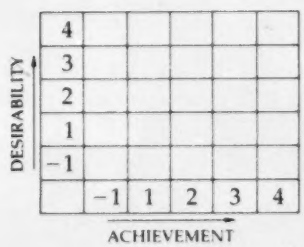


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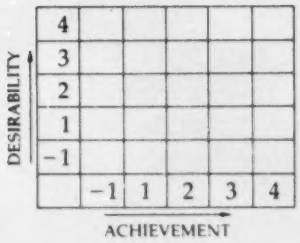


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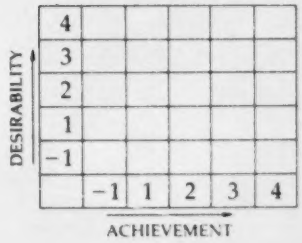


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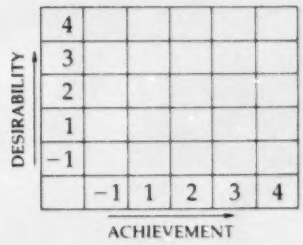


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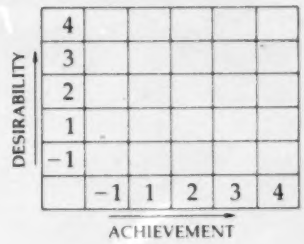


*C. Professional Activities and Development*

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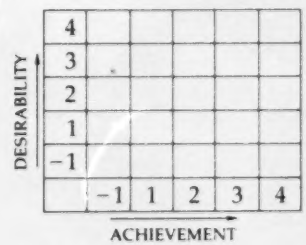


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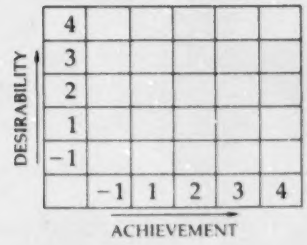


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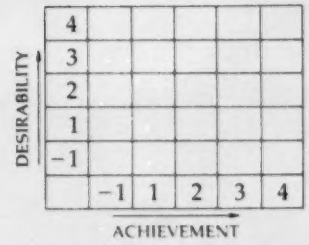


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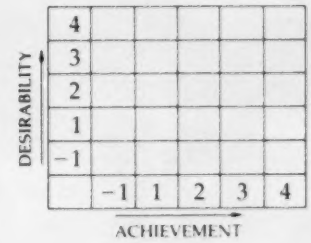


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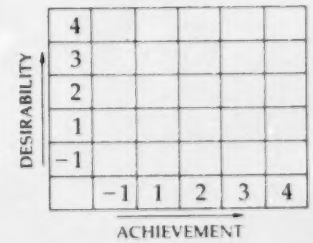

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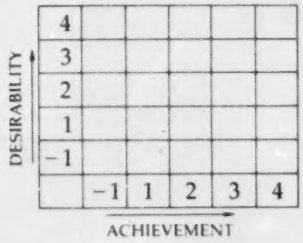


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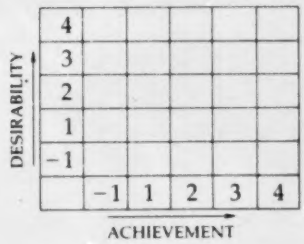


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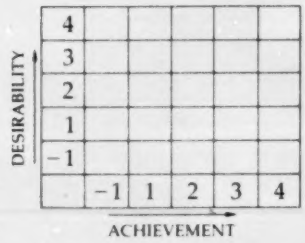


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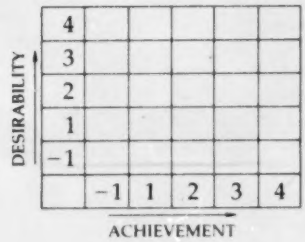


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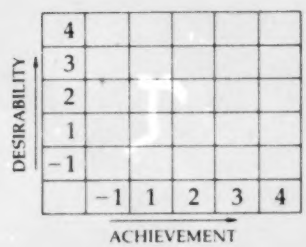


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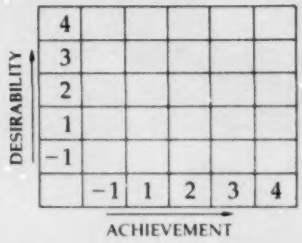


*D. Contributions to the Profession*

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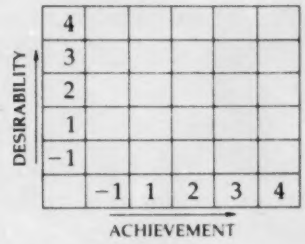


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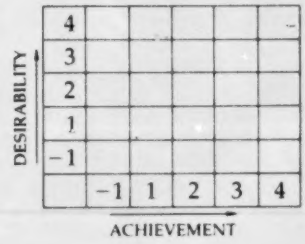


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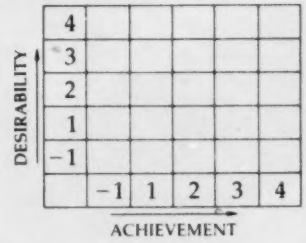


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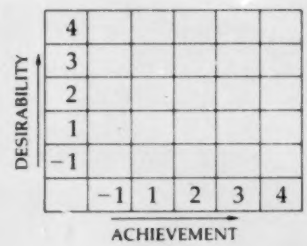


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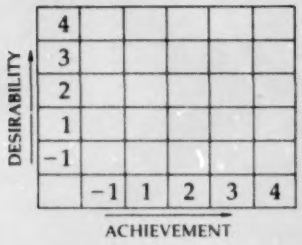


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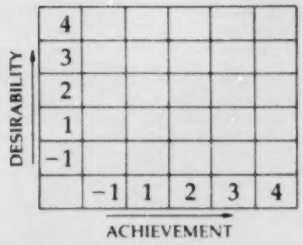


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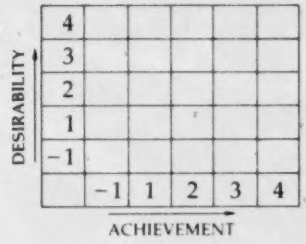


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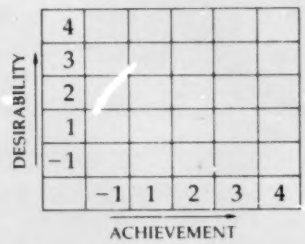

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## F. Student and Teacher Perceptions of Teacher Professionalism

### Student Perceptions

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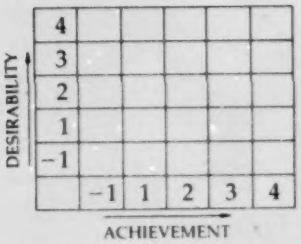


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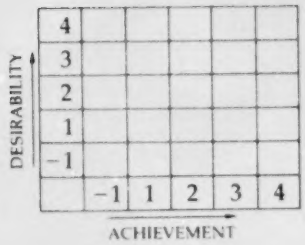


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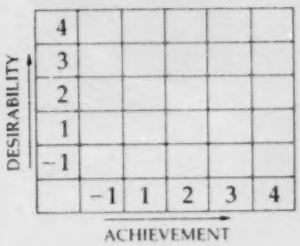


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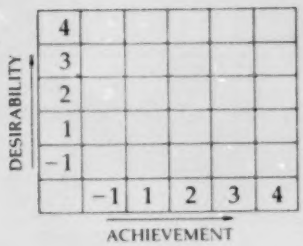


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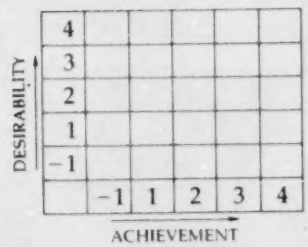


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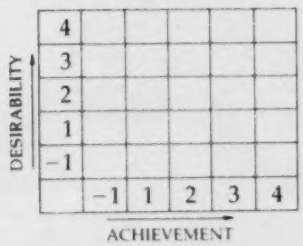


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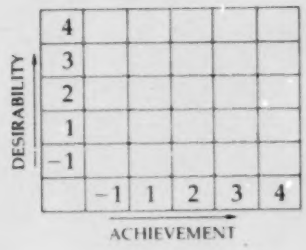


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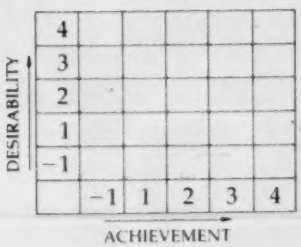


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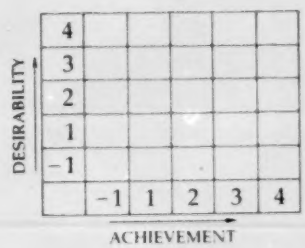


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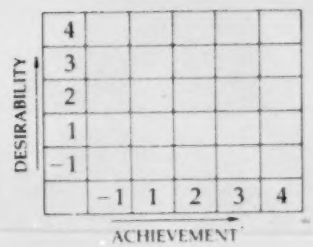


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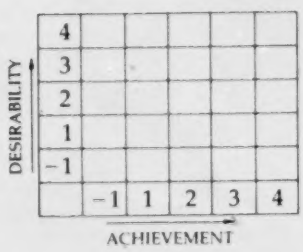


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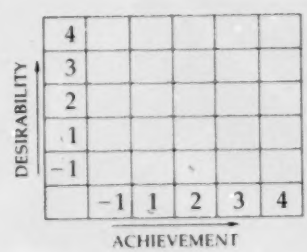


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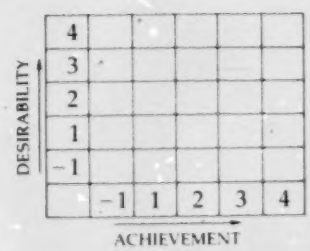


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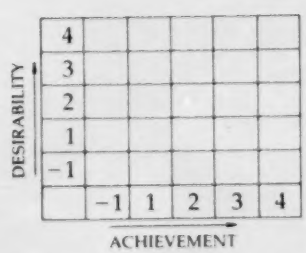


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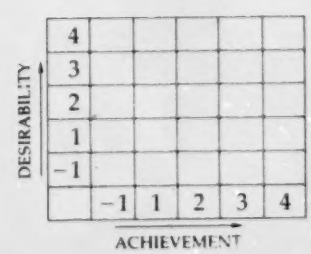


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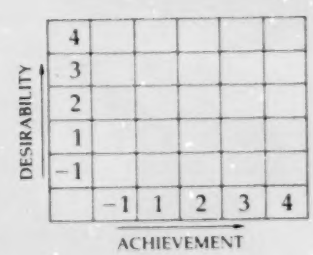

## Teacher Perceptions

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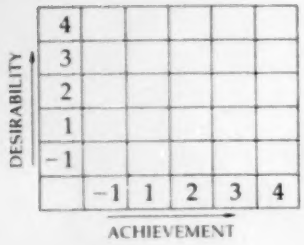


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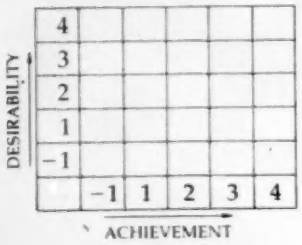


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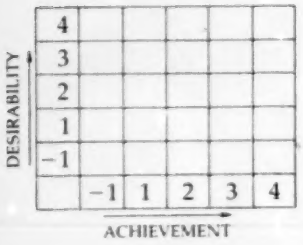


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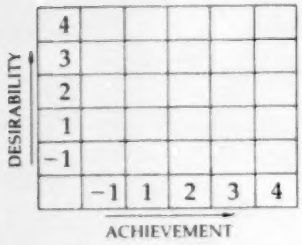


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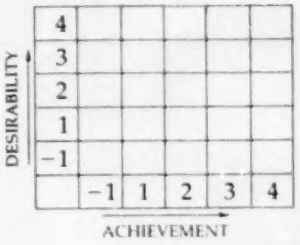


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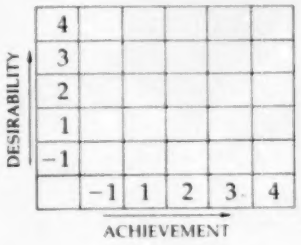


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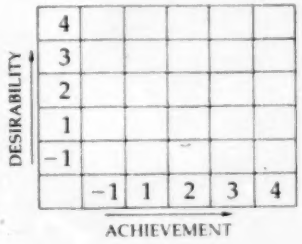


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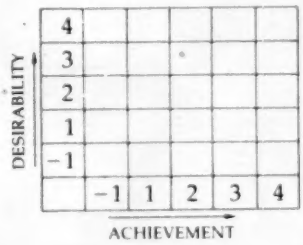


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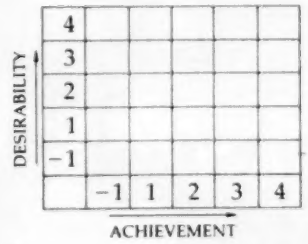


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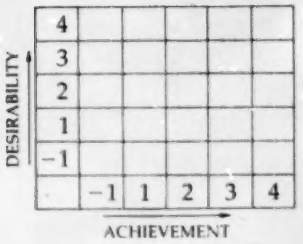


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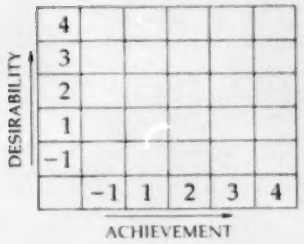


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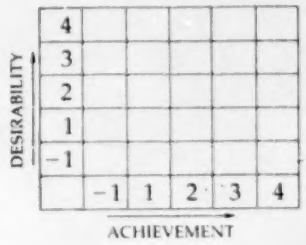


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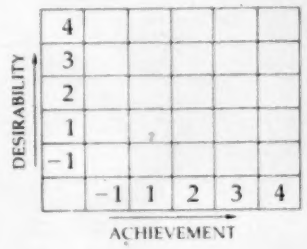


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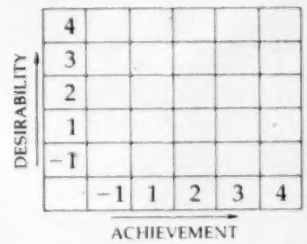


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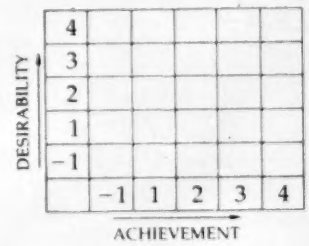

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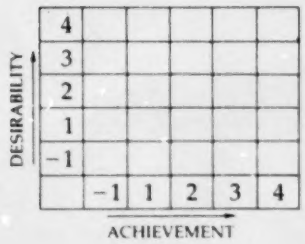


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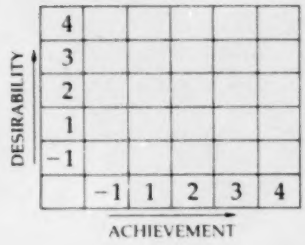


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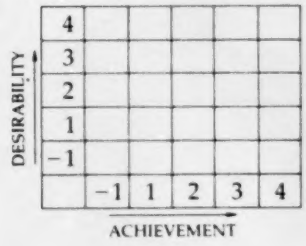


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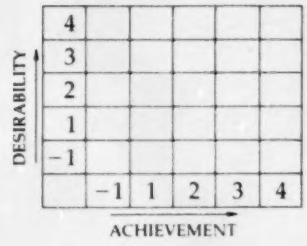


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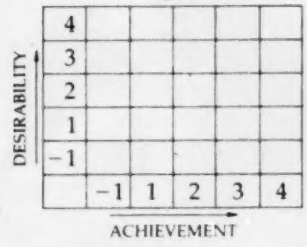


*G. Teacher Recruitment and Selection Policies*

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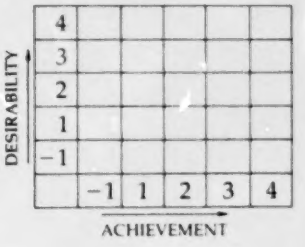


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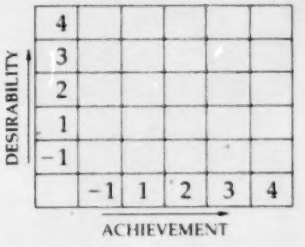


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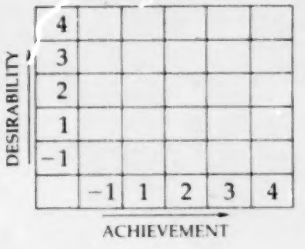


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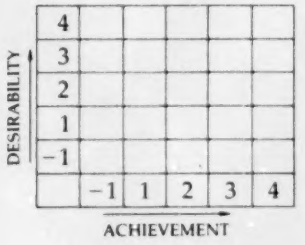


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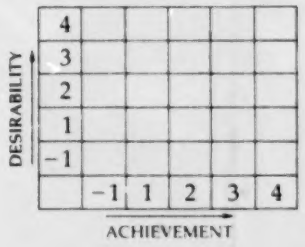


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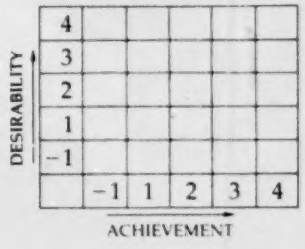


## III. Science Student/Teacher Interactions in Our School

*A. Quality of Student/Teacher Personal Relationships*

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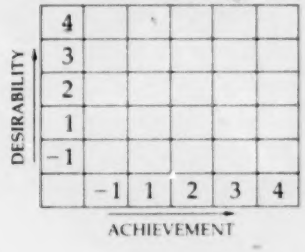


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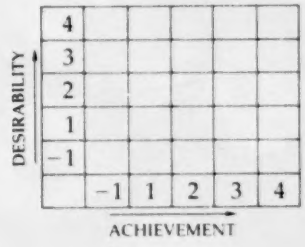

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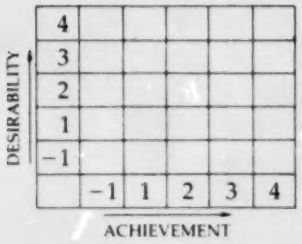


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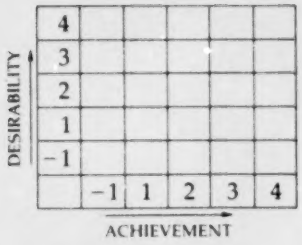


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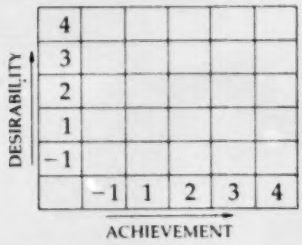


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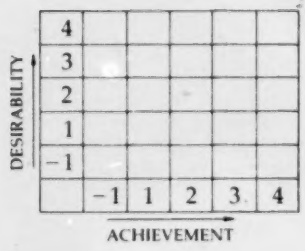


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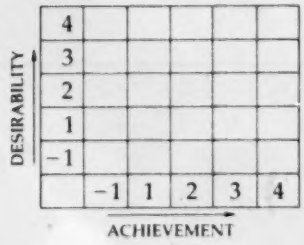


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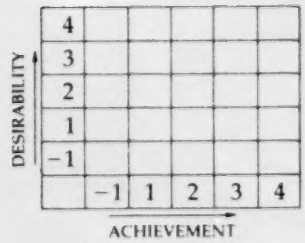


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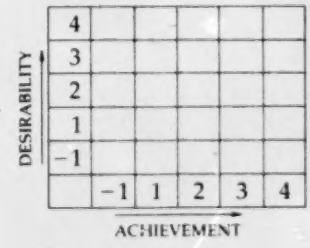


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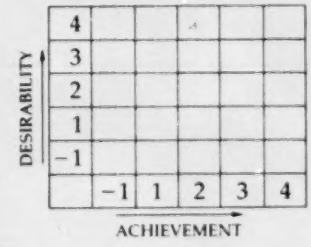


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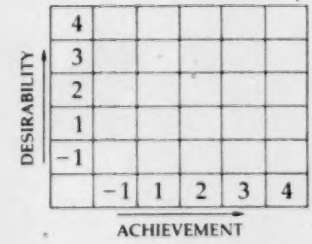


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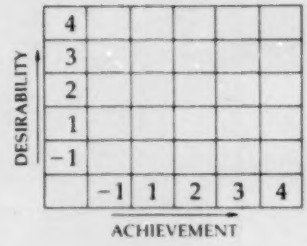


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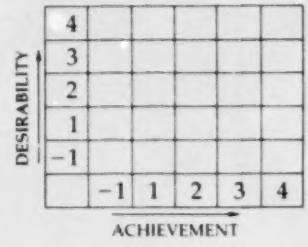


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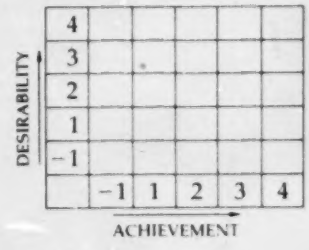


19.

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## B. *Teacher and Student Perceptions of Teaching Practices*

### Student Perceptions

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2.

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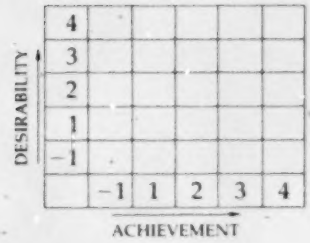


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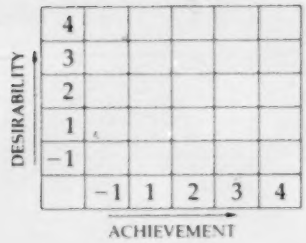


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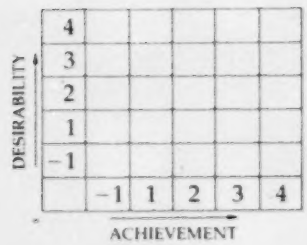


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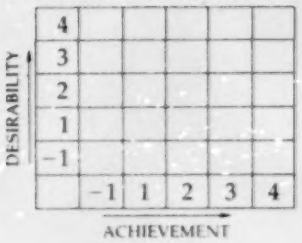


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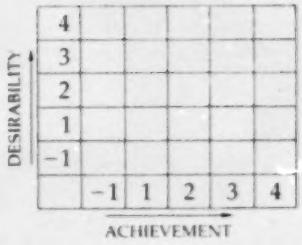


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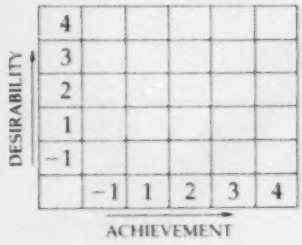


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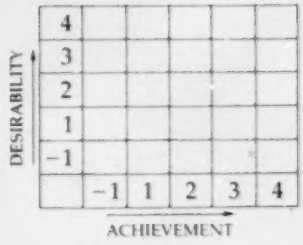


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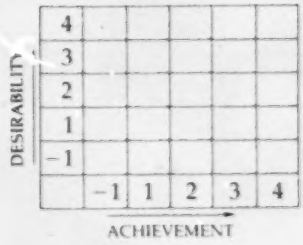


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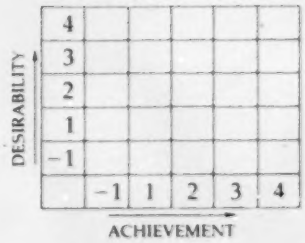


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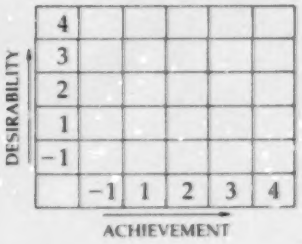


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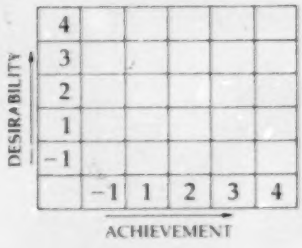


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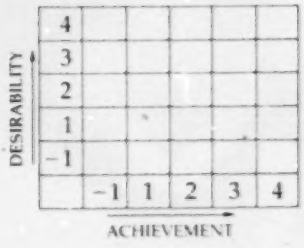


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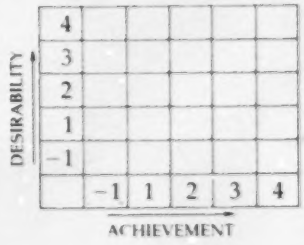

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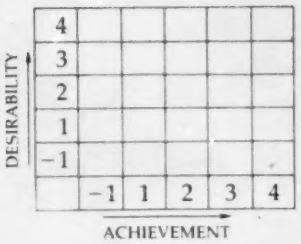


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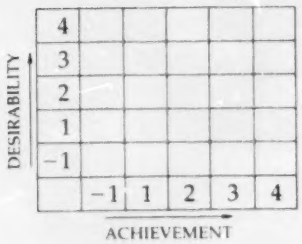


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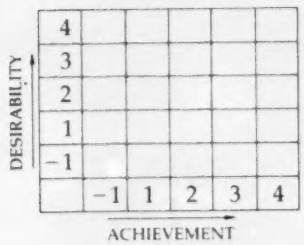


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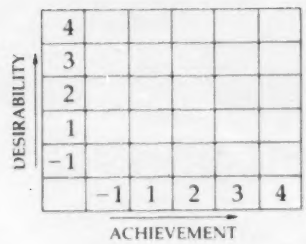


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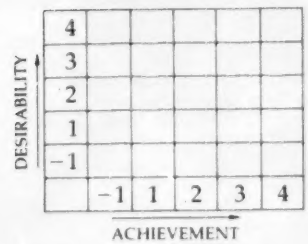


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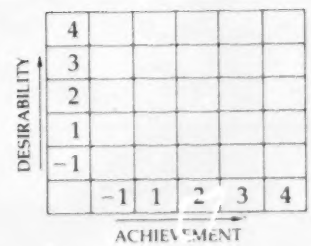


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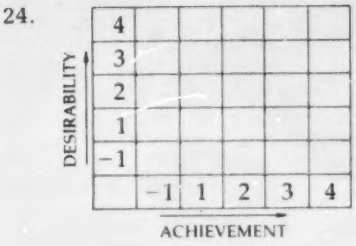


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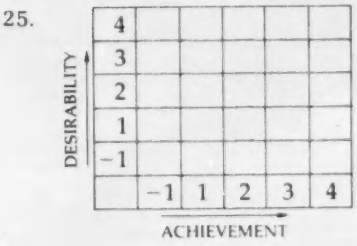


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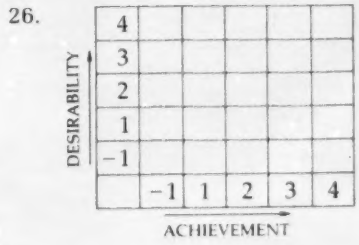


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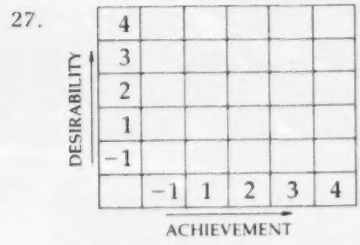


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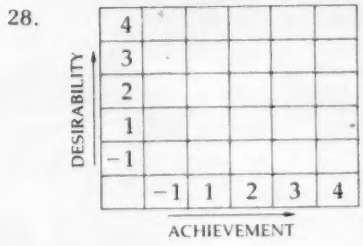


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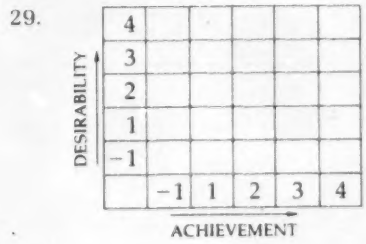


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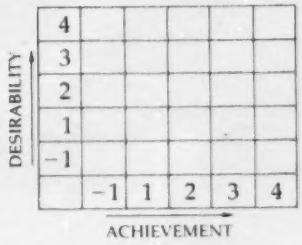


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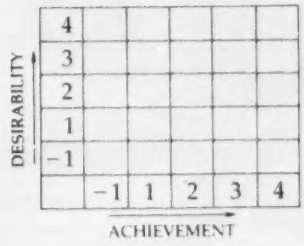


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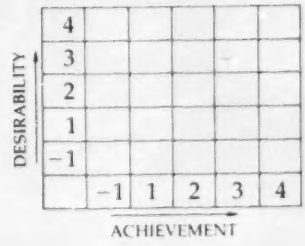


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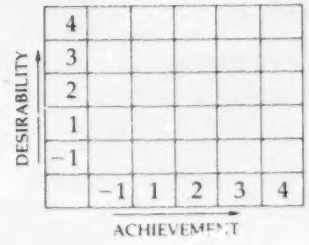


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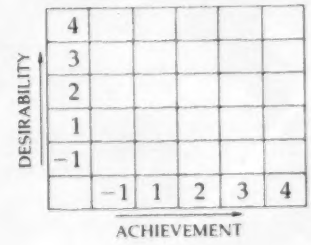

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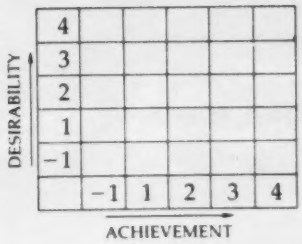


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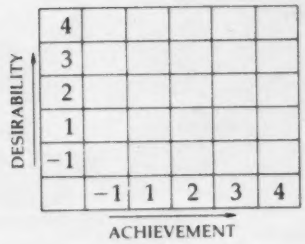


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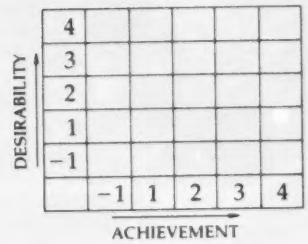


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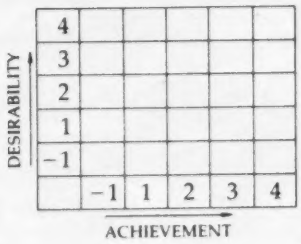


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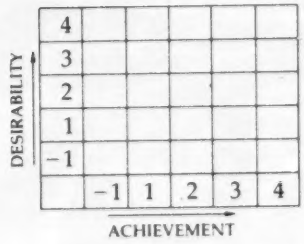


## Teacher Perceptions

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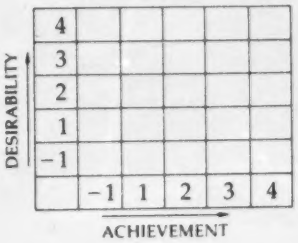


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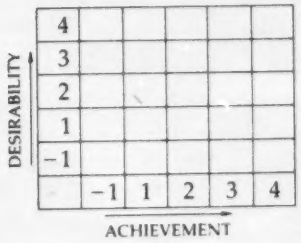


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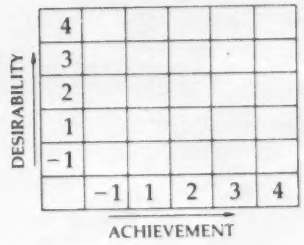


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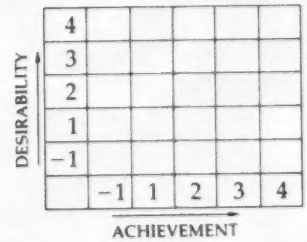


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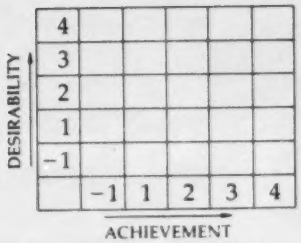


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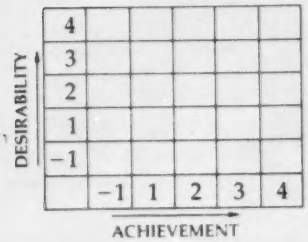


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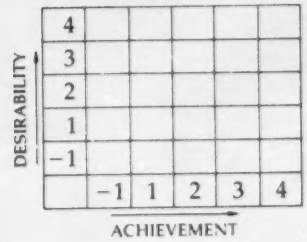


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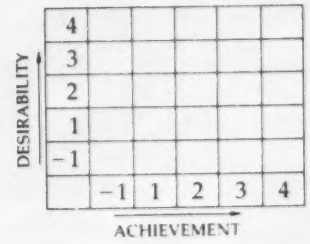


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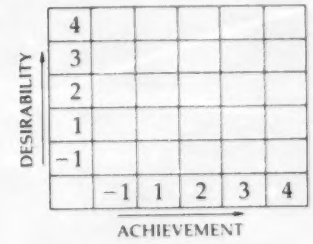


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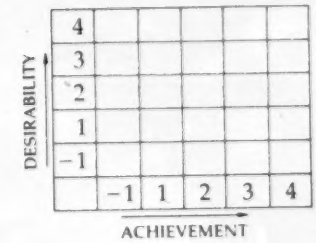

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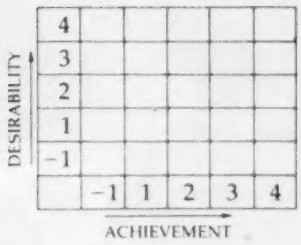


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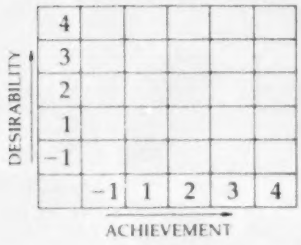


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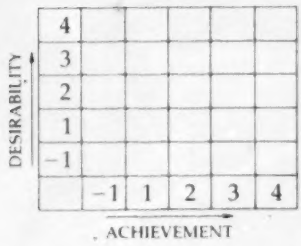


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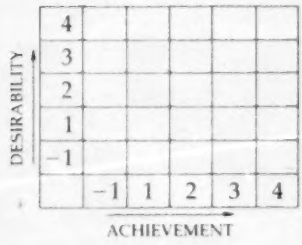


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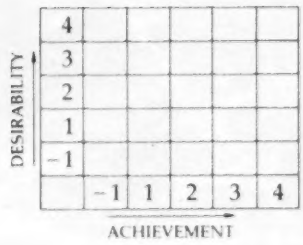


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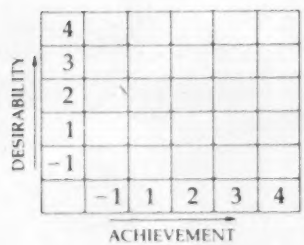


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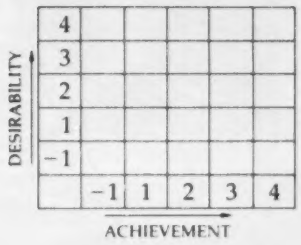


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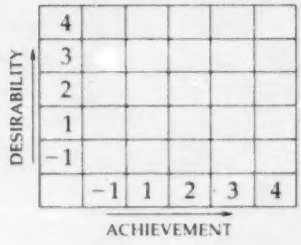


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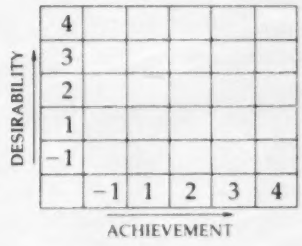


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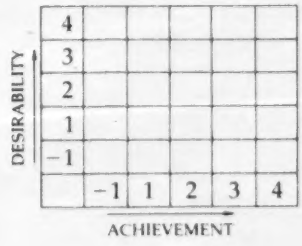


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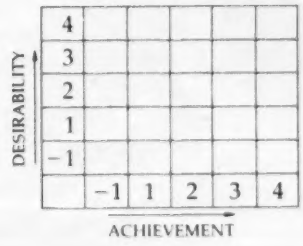


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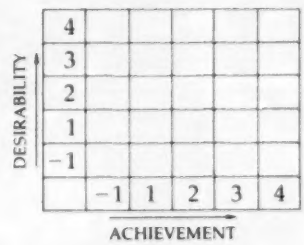


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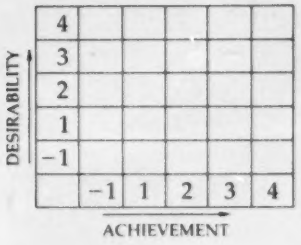


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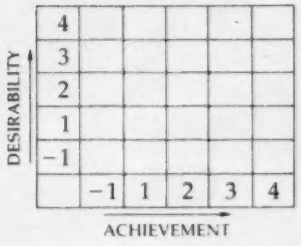


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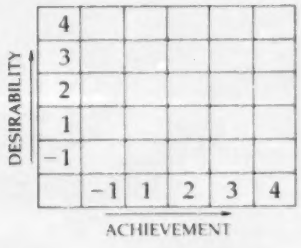


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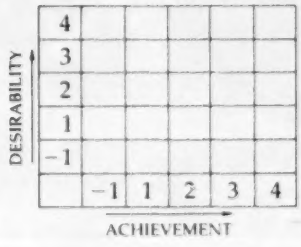


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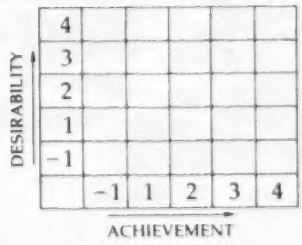

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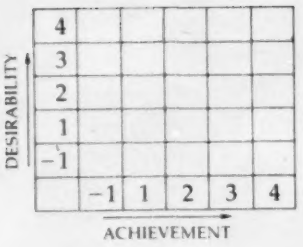


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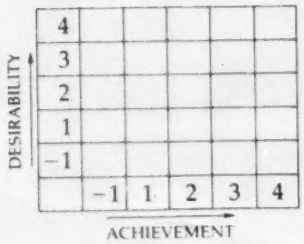


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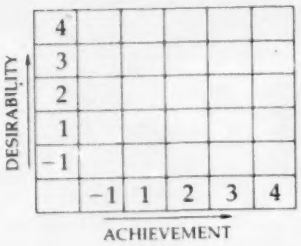


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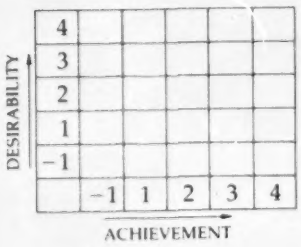


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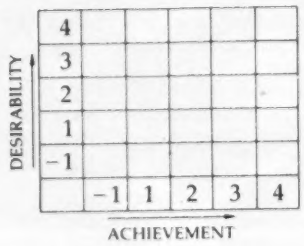


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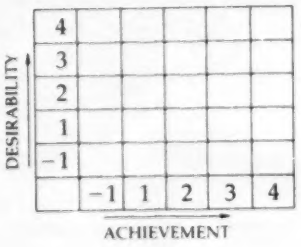


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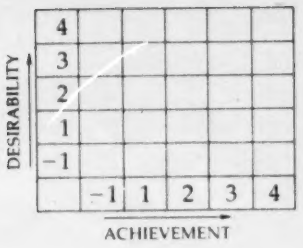


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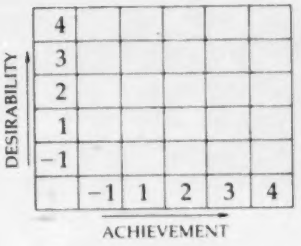


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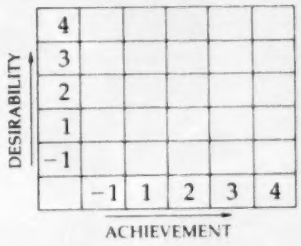


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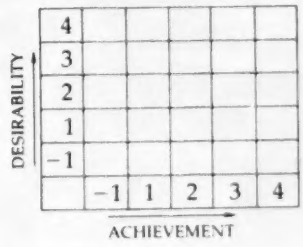


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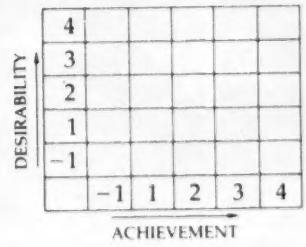


## IV. Science Facilities and Teaching Conditions in Our School

*A. Classroom, Laboratory, and Related Space Facilities*

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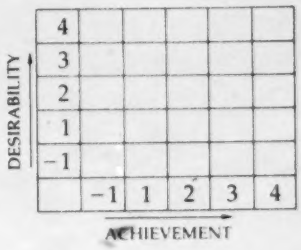


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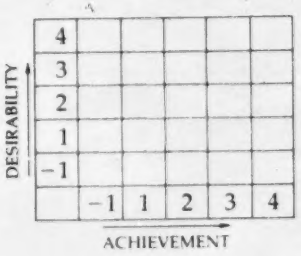


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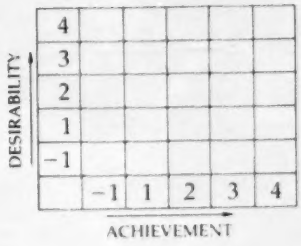


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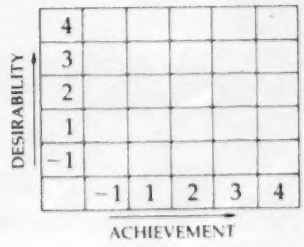


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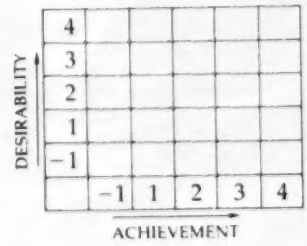

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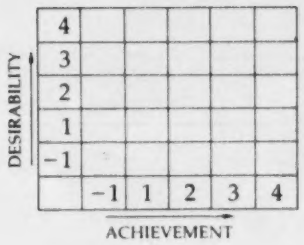


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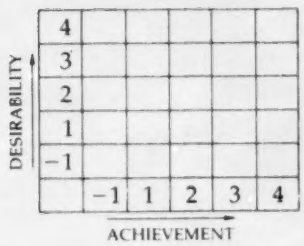


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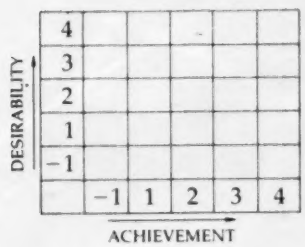


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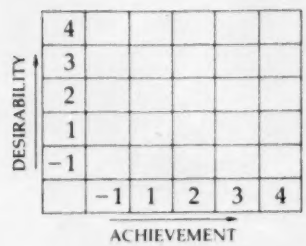


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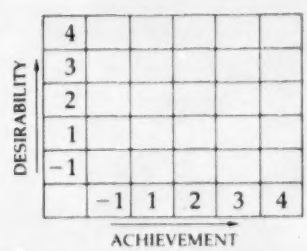


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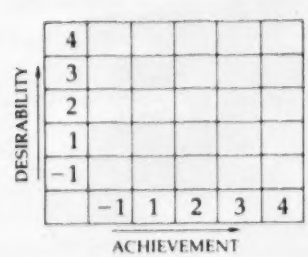


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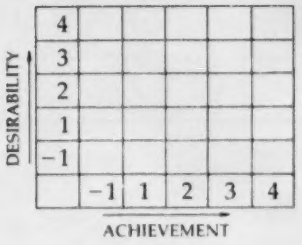


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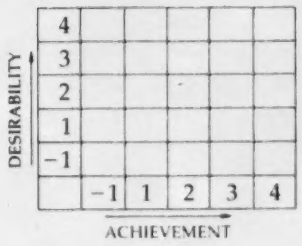


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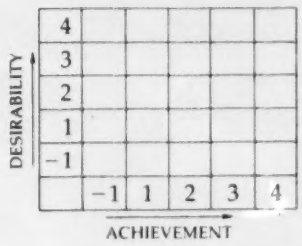


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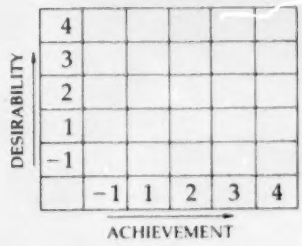


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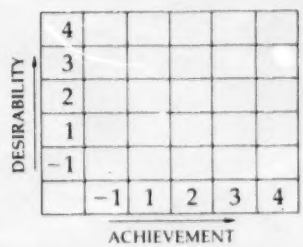


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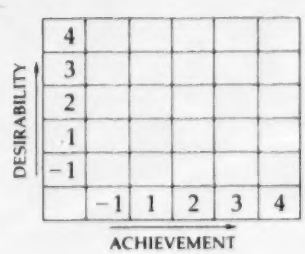


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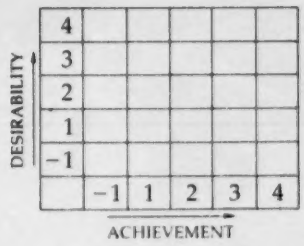


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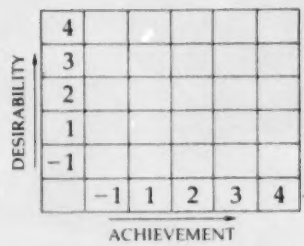


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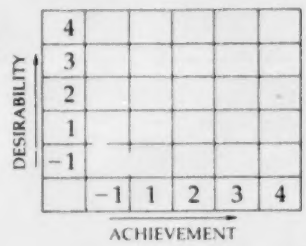


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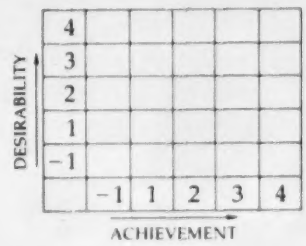


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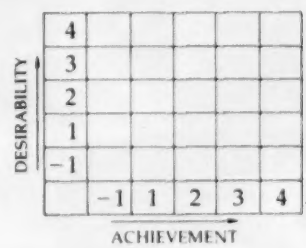


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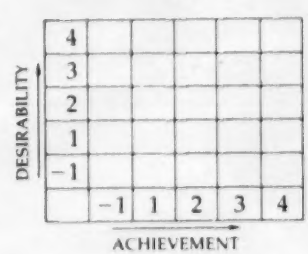

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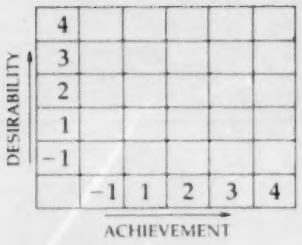


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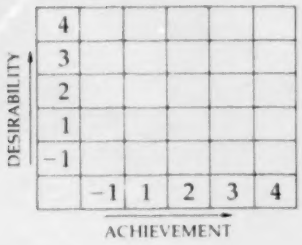


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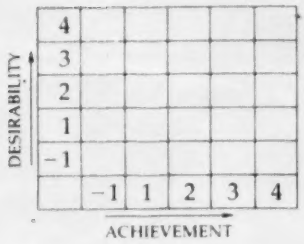


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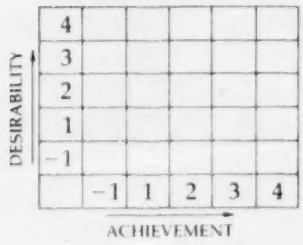


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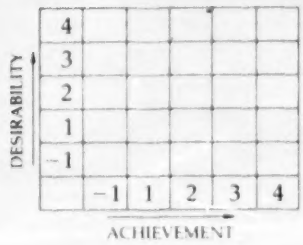


29.

## B. *Laboratory Safety*

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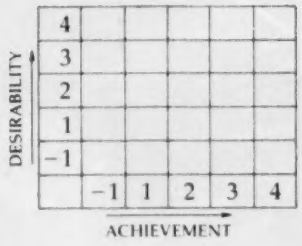


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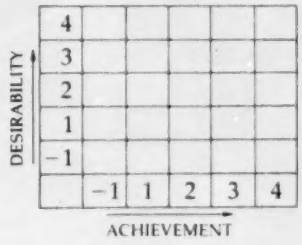


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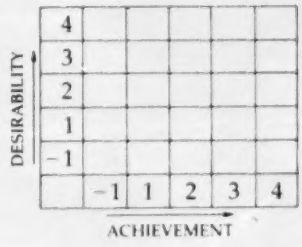


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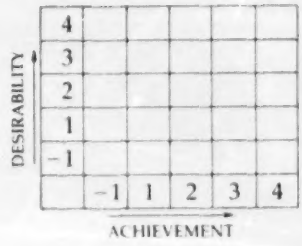


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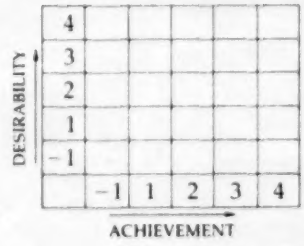


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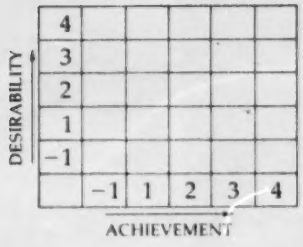


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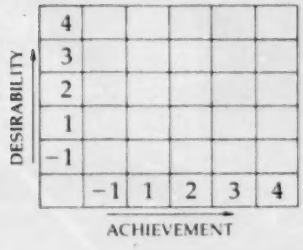


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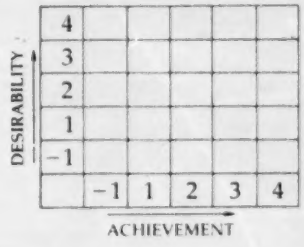


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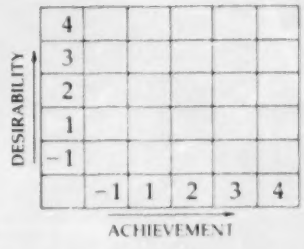


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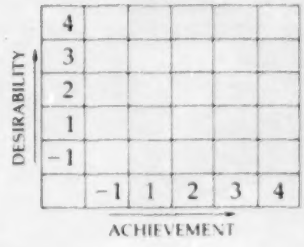


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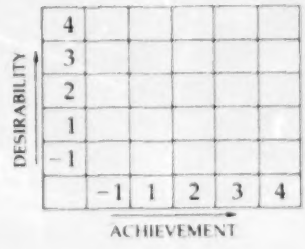

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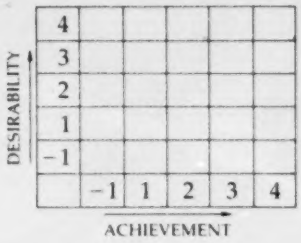


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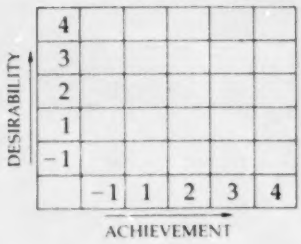


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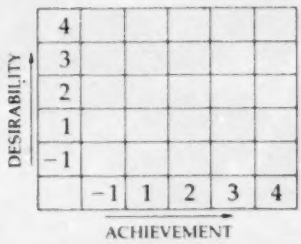


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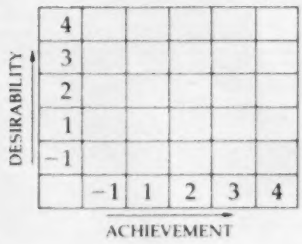


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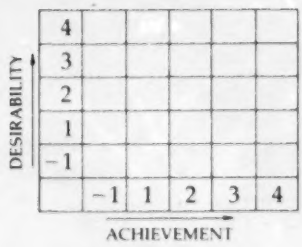


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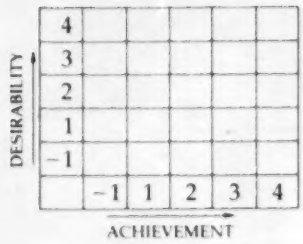


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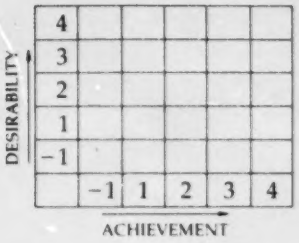


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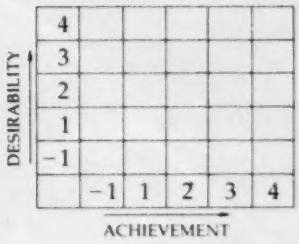


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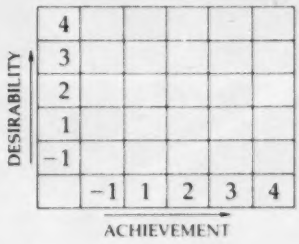


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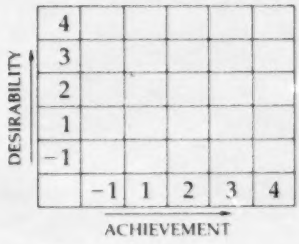


*C. Teaching/Learning Equipment and Materials*

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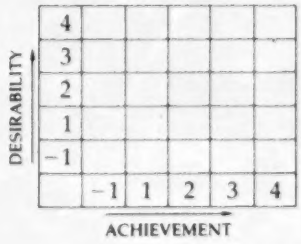


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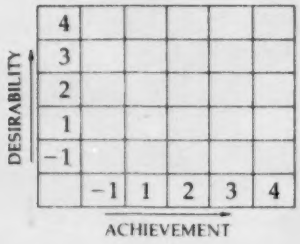


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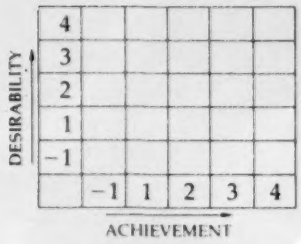


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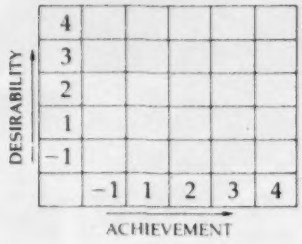


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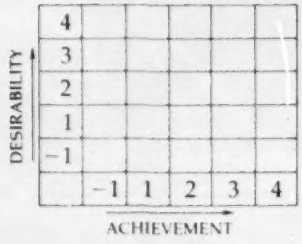


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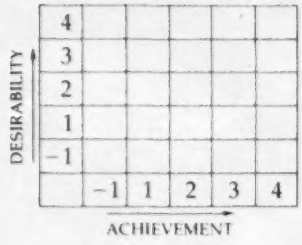


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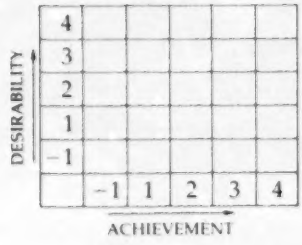

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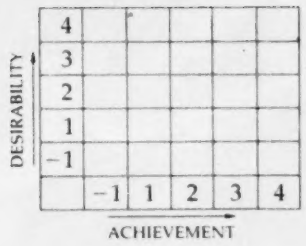


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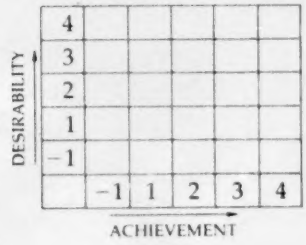


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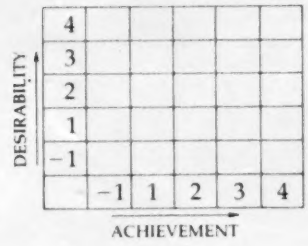


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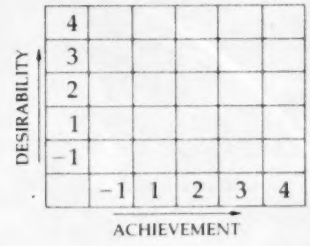


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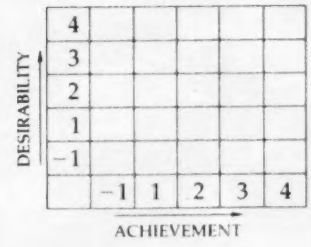


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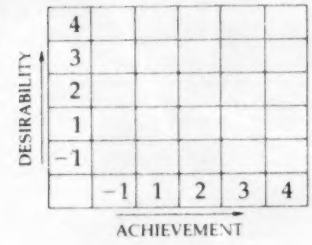


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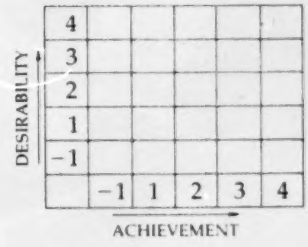


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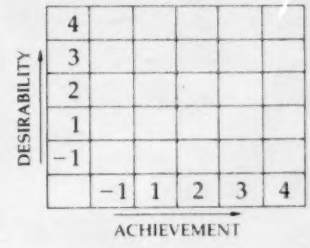


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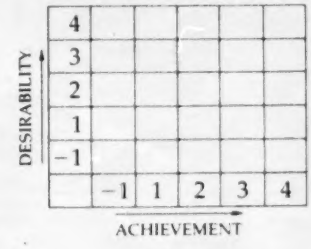


## *D. Staff Policies and Practices*

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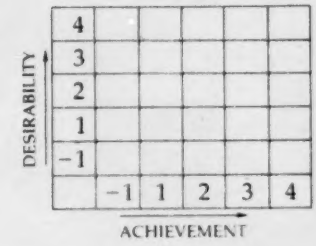


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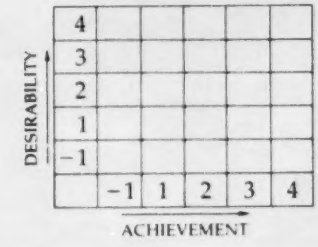


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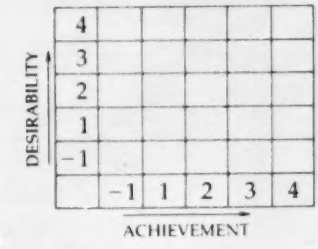


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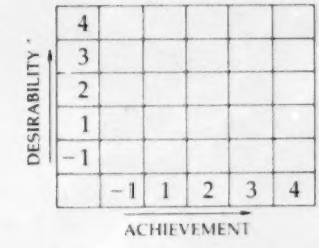


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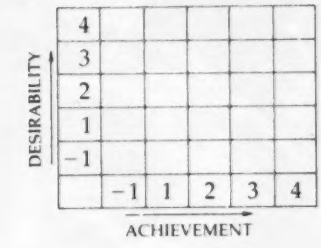

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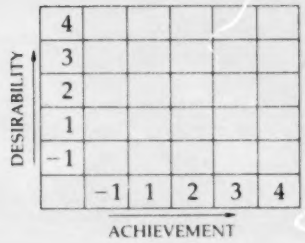


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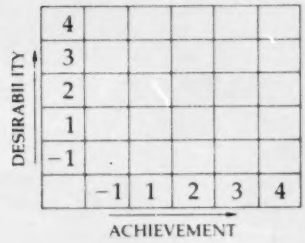


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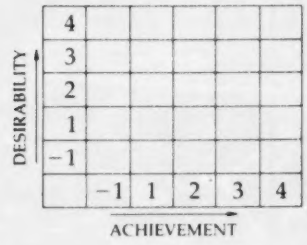


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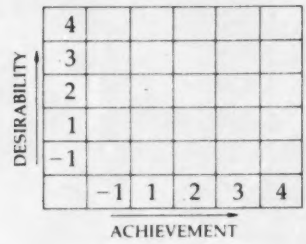


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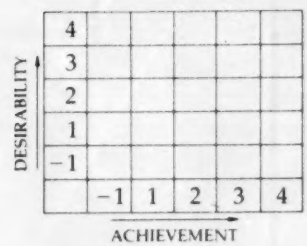


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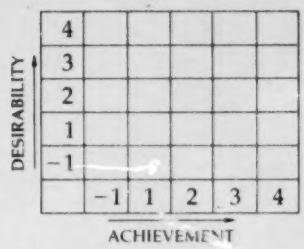


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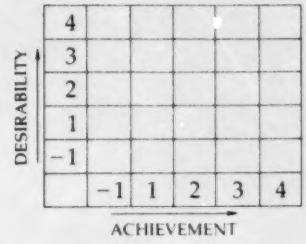


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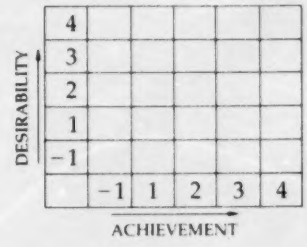


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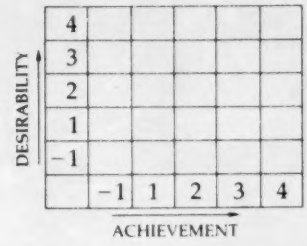


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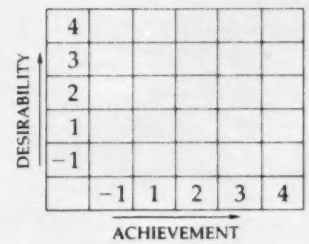


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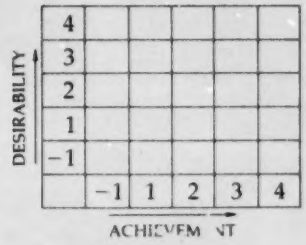


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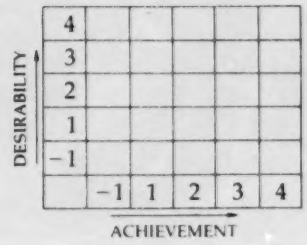


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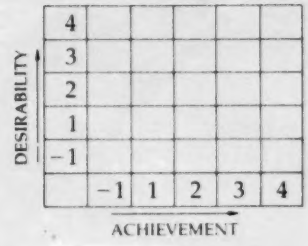


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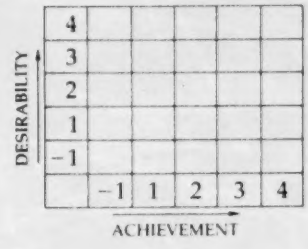


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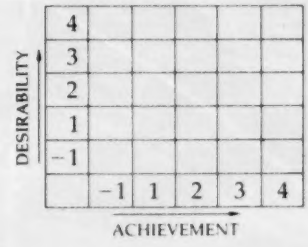


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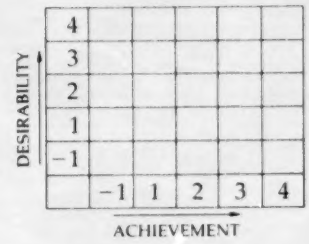

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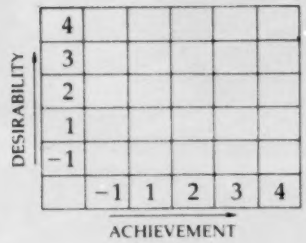


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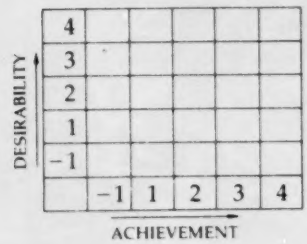


*E. Support Services*

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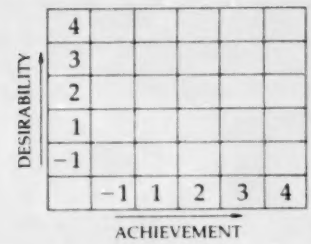


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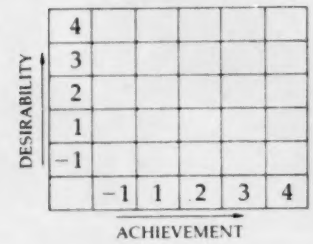


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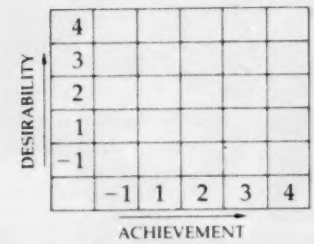


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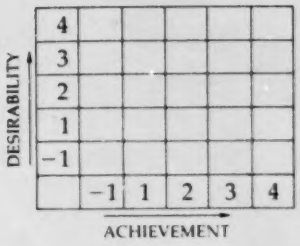


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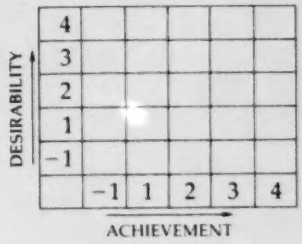


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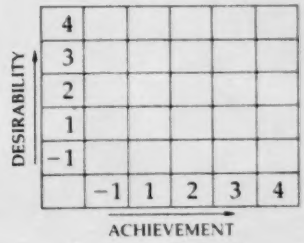


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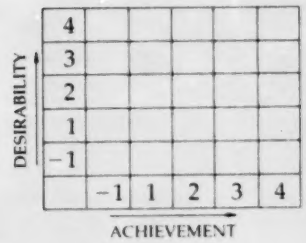


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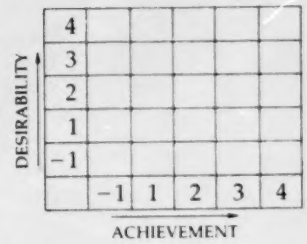


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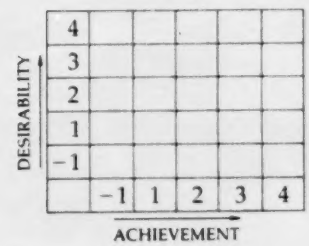


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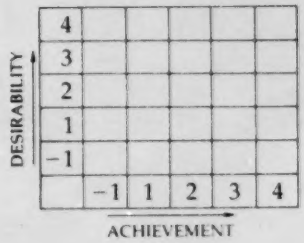


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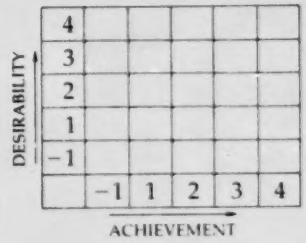


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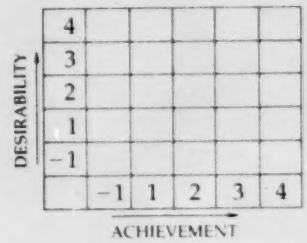


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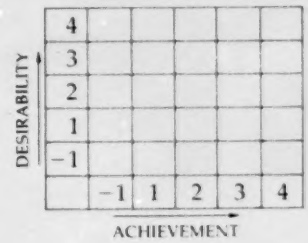


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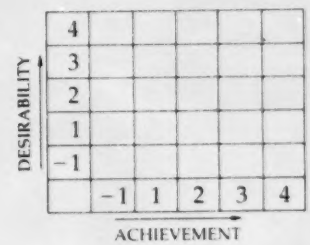

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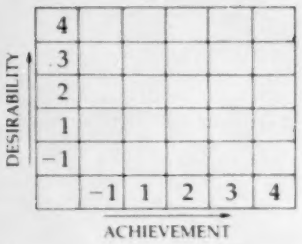


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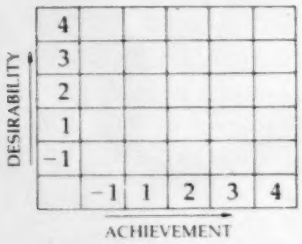


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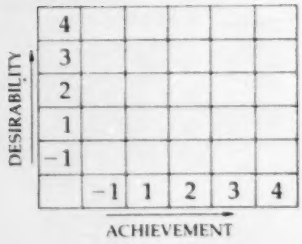


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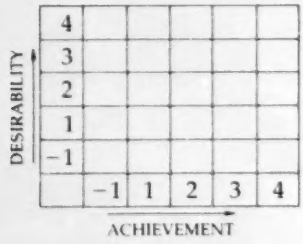


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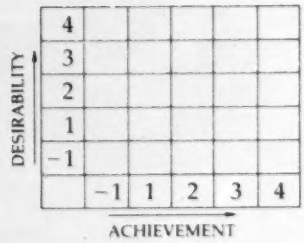


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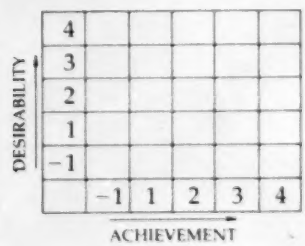


You are invited to offer suggestions in the space below for improving future editions of the **Guidelines for the Self-Assessment of Secondary-School Science Programs.**